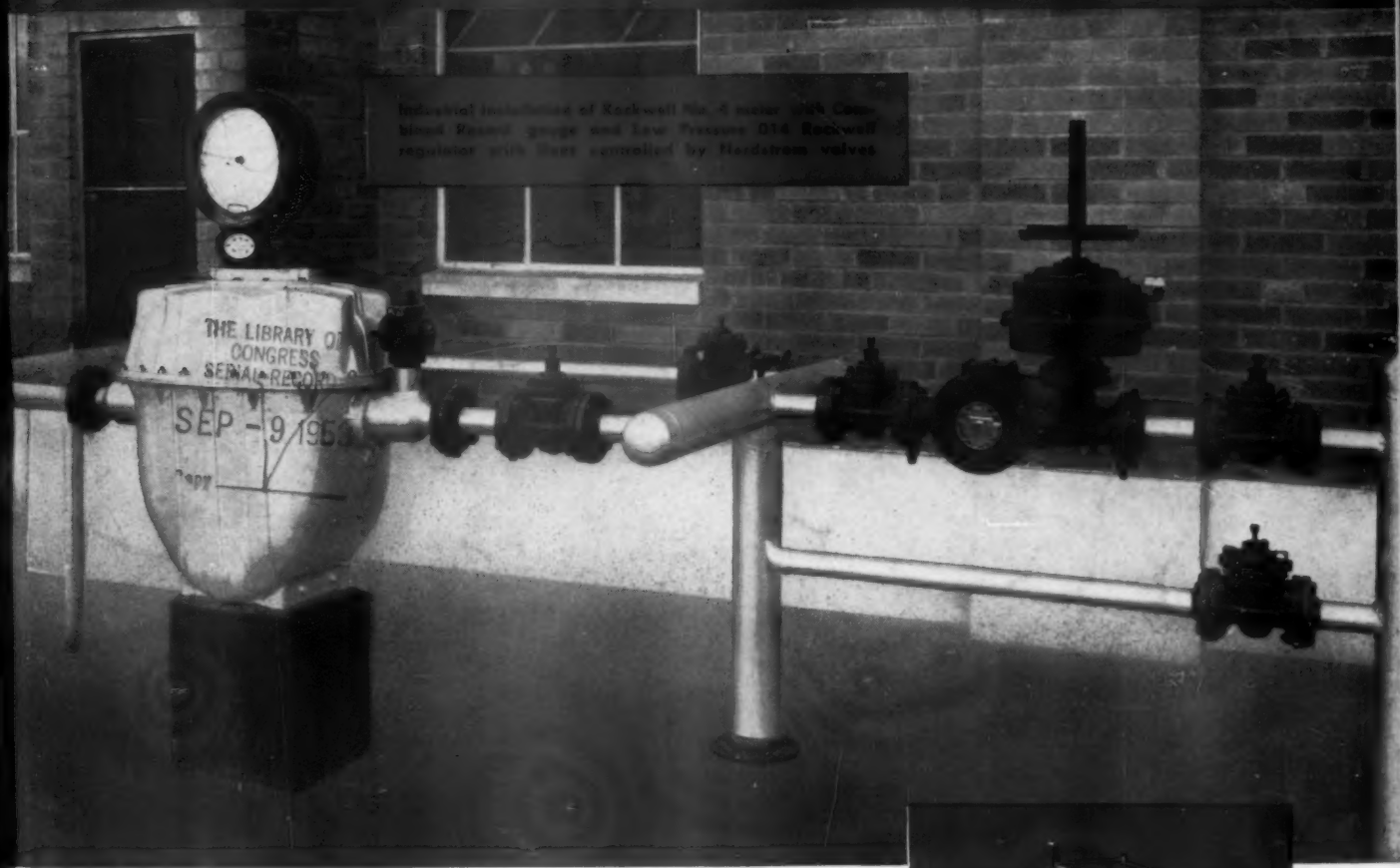
VOL. 179 No. 1 AMERICAN JULY, 1953

Gas Journal



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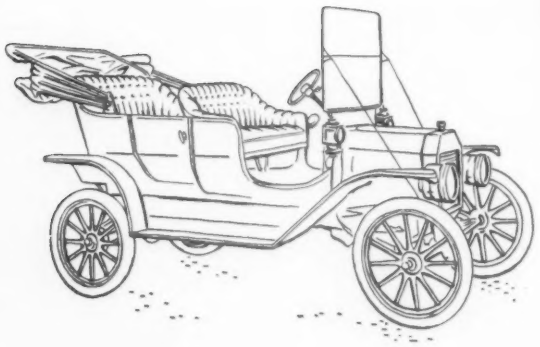

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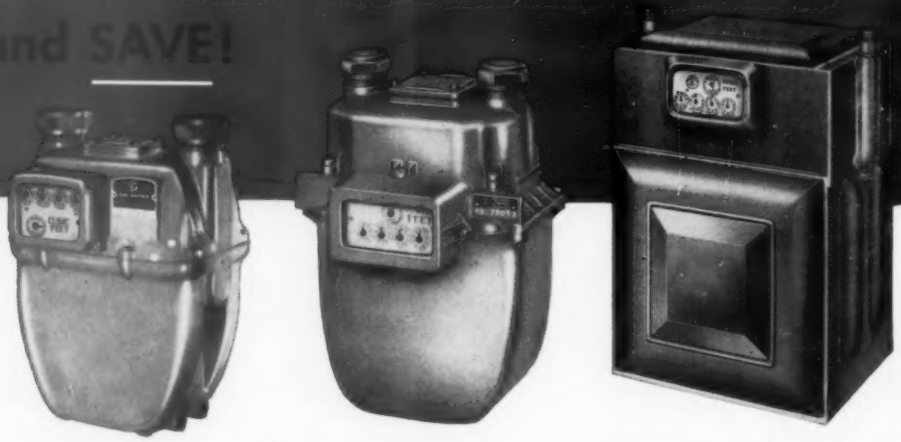

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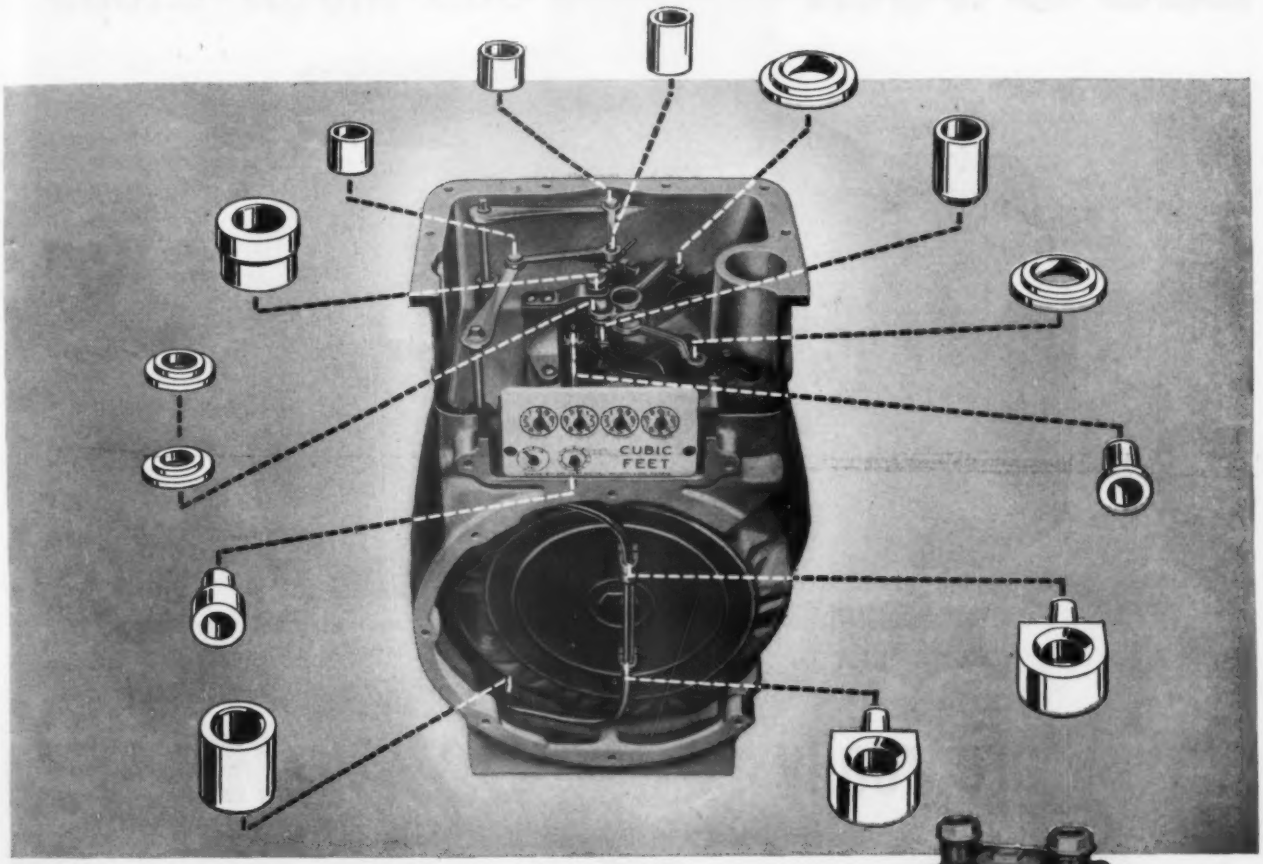

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AMERICAN GAS JOURNAL, July, 1953. Vol. 178, No. 5. Published monthly (except October, then semi-monthly), by American Gas Journal Inc., at 73 Main Street, Brattleboro, Vt. Entered as second class matter January 24, 1950, at the post office at Brattleboro, Vt. under Act of March 3, 1879. Executive and editorial offices at 205 East 42nd St., New York 17, New York. Subscription prices, U.S. $3 per year; Canada $4; Foreign $10. Single copies 50 cents, except October 15 issue, which is not sold separately. Printed in U.S.A.

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(Pat. app'd for)

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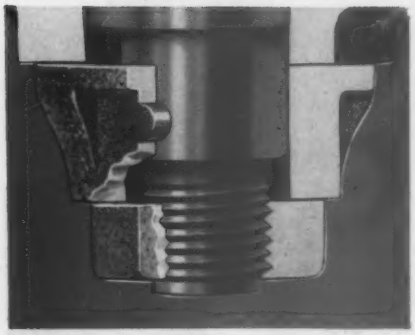

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AMERICAN Gas Journal
ESTABLISHED 1859

VOLUME 179 JULY 1953 NUMBER 1

This month...

Usually, when there is a conflict, argument, scrap or fight that we hear about, in time, we're off like fire horses to get there before things quiet down. In fact, if the point of difference is being handled in an atmosphere of quietude and deserves more emphatic attention, we have been known to give it some small lift. As we might have expected, the time has come when we find it sufficient to just sit quietly and give our close attention, but not our participation, to a gas industry wrangle. So, on page 20, we merely report two of the vigorous sets of opinions expressed in the prospective-delivery of natural gas to the Pacific Northwest. It would appear that neither Mr. Gellert, of Seattle, nor Mr. Gueffroy, of Portland, need any embellishments from us.

• • •

Inasmuch as the Phillips Petroleum case, relating to their status as a "natural gas company," has moved well beyond the justice of the peace level, where our opinion might have been helpful to the judge, we shall content ourselves with a temperate treatment of that difference of opinion. Joseph E. Finley, a Washington attorney with a keen set of senses for gas industry matters, has given us the situation as it stands, on page 18, and it seems that is the way it will stand until sometime in 1954. The final outcome of the case, in the Supreme Court, can have far-reaching effects on the entire gas industry—and, we suspect, with some consequent emphasis on the distributing gas utilities.

• • •

Competition, we observed last month in this column, can not be viewed lightly and now we see more of the weight of that competition in California, as summarized by E. F. McNaughton, director, utilities division, California Public Utilities Commission, on page 29. Important, to us, is the comparison of per-customer utilization: up 52% for natural gas; up 67% for electricity.

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AMERICAN GAS JOURNAL, established 1859, is published monthly except October, semi-monthly, by American Gas Journal, Inc., 205 East 42 St., New York 17, N. Y. ROBERT M. POE, President and Treasurer; ELLIOTT TAYLOR, Vice-President and Publisher; M. E. KELLEHER, Secretary and Assistant Treasurer.

ADVERTISING REPRESENTATIVES: John P. McDermott, Edwin J. Volckmann, 205 E. 42 St., New York 17, MU 6-4360; Urben Farley & Co., 120 S. LaSalle St., Chicago 3, FI 6-3074; Jack O. Hodges, 479 S. Holt Ave., Los Angeles 48, BR 2-3935; Geo. F. Haines, 681 Market St., San Francisco 5, DO 2-4475.

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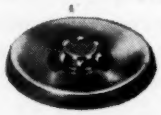

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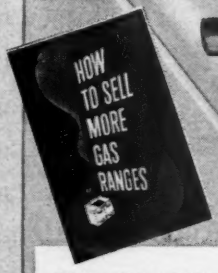

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FIGURES LIE—FACTS DON'T

Anyone who takes the trouble to read the annual reports of gas utilities will get some very definite impressions. There is a greater growth in physical sales than indicated in terms of dollars.

Such reports frequently carry official comment to explain that the increase in house heating — and the further supply of gas now being arranged — will assure further growth. Also, a home heating rate increase is being sought. While that is being argued, the industrial gas rate has already been increased.

When the reports are studied more carefully it appears that, IF they contain a breakdown of sales and revenues from each category, industrial gas frequently accounts for forty to fifty per cent of total sendout — but only one-fourth or less of total revenue.

Seemingly the industrial load is unprofitable. Such would be a permissible conclusion of the figures presented... except for these facts:

...that much of the "industrial gas" is dump gas...sold on an interruptible load basis, and at a price which penalizes the revenue of the utilities. The price has been depressed to a fraction of the actual value of gas as a fuel only to insure a constant flow of gas for home heating. The industrial user gambles his low rate against the possibility of an interrupted supply...and more.

Confusing as the figures may be, the fact remains that industrial gas is being penalized as...

1. A desirable load for the stockholder.
2. A profitable revenue for the company.
3. A reliable fuel source for the consumer.
4. An important working tool for the production plant.
5. A heat processing tool of unique and outstanding qualities, deserving appropriate recognition and price.

Industry appreciates tools and their value and reliability. Will the gas industry recognize these potentials and support the facts?

Can the industry, by and large, ignore the potential with figures, until "cold facts" are overwhelming?

Frederic O. Sass

President

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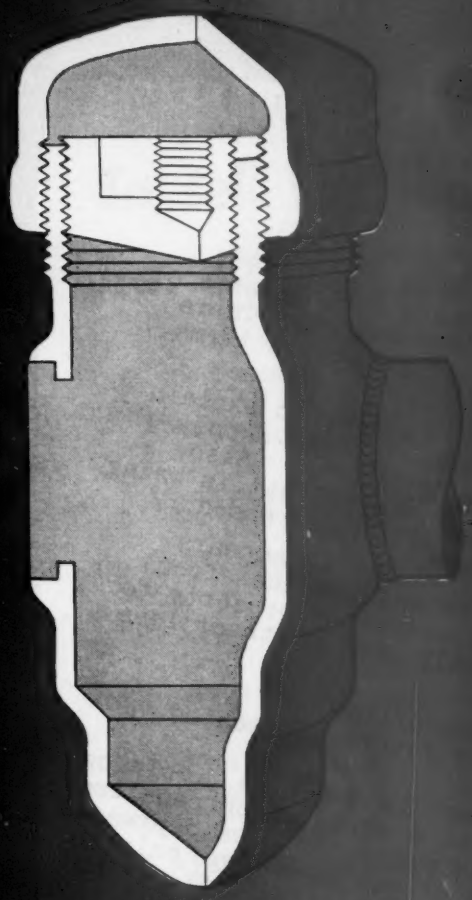

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are similar to Mueller Line Stopper Fittings and utilize the same line stopper equipment. However, the Extension Stopper Fittings are specifically designed for new construction and consist of a one-piece steel forging. The heavy body walls are recessed for quick, easy alignment of pipe ends and only the end joints are welded. Thus, a valve means is provided with only one additional weld. Unlike two-piece fittings, the pipe does not extend through the fitting and no drilling is necessary. The absence of sharp pipe edges assures longer stopper life and a stopper may be inserted at any time under pressure. Extension Stopper Fittings come in three basic styles – for future stop-off use, for dead end extension use, and for lateral extension use. Sizes 1½" and 2".

FUTURE STOP-OFF USE
H-17150

DEAD END EXTENSION USE
H-17155

LATERAL EXTENSION USE
H-17152

IT'S SIMPLER TO PROVIDE FOR FUTURE STOP-OFFS!

By using Mueller Extension Stopper Fittings in your present line construction, a valve means for future repairs or extensions is provided with only one additional weld.

Editorial:

No Time for the Timid

IT is traditional, we presume, for publishers always to put in a plug for more advertising by and to the industry that they serve. The arguments are well-enough known: Advertise in bad times to improve business; and advertise when things are lush because then it can be more easily afforded. The cynic's view of this admonition, of course, is that since publishers and publications live off advertising it is to their selfish interest to advocate maximum expenditure in that direction, even if such a course seems at times to run head on into business reality.

We believe that it would be thoroughly unrealistic now for us not to recognize that within the next two years business is going to be harder to get than it has been since the start of the Korean crusade. Barring a full-scale resumption of the World War, it becomes apparent that defense production is due for some cutbacks, gradual in most instances but somewhat more drastic in others. This means that the percentage of national income that has been coming out of defense production will suffer a corresponding drop.

Farm income is already substantially off from the average of a year ago, and there is no reason to believe that it will show any early improvement.

As an offset to present and anticipated declines in income, organized labor is undertaking to sell industry and the public on a general acceptance of its thesis that higher wages now can maintain and stimulate prosperity. The steel industry has already put a modest wage increase into effect, with a corresponding boost in the price of steel. Other unions that take their cue from the big leaders are now ready to ask for new contracts with emphasis on the necessity for more take-home pay. These factors will inevitably result in higher manufacturing costs which, in the face of a lagging retail market, cannot all be passed on to the consumer.

With distributor and dealer stocks piling up, few will regard it as a propitious time to increase prices on goods that aren't selling even at the present costs to the consumer. The tightening of credit-buying restrictions is already tending to exert a curbing influence on the sale of connected home appliances.

It is pretty generally agreed that the only solution will be to accelerate the consumer market, at present prices or with moderate increases if these become necessary, due to higher material and labor costs.

There is only one way that we know of to provide this acceleration and that is through advertising, promotion and more intensive sales effort. There may be some industries that have built up enough sales momentum to carry them over protracted periods of sales recession. There are others no doubt that have accumulated enough reserve that they can afford for a time at least to live off their fat.

Neither is true of the gas appliance industry. Since the close of World War II it is one of the few major industries that has done little better than keep post-war volume up to pre-war averages. And many companies, such as those in the heating equipment business, for instance, which have shown large dollar volume of sales, have turned up with net earnings after taxes that were ridiculously small.

Within recent months it appears to have dawned on the gas utilities that a vigorious and healthy gas appliance industry is an absolute essential to gas company progress. True enough, that classic dictum was always agreed to in principle, but too few of the gas companies ever did anything constructive about it. The time honored and traditional recourse has been to run to their local utility commissions seeking an increase in rates.

The gas utility industry and the appliance manufacturers are now embarking jointly on an industry development program. It can hardly be described as having started, since the plans so far exist only on paper and in the minds of those stalwart leaders who fought the program through to acceptance. Until this program has been actually put into effect, and most particularly until the retail gas appliance industry, and the dealers who are responsible for most of the ultimate sales, are made aware beyond any shadow of doubt that a new era of gas industry is opening, the whole thing remains nothing but talk.

For the gas industry to start to trim its sails now in the face of the vague and speculative possibility that some minor business readjustments may be in the offing, perhaps a year from now, would indeed be suicidal. The industry, and we mean the utilities as well as the manufacturers, has practically coasted through the boom period of the Korean war. It can ill-afford to abandon the new and upward path that it has now started, and on which it has taken no more than the first few hopeful steps.

Elliott Taylor

Polyvinyl Chloride Tape Approached

THE first step in a consideration of the merits of any material for underground pipe protection is to review the requirements of the job and to summarize the characteristics that an ideal material would possess.

These are summarized in 12 points:

1. The material must adhere tenaciously to the pipe.
2. It should be non-absorbent and impervious to water, moisture vapor, etc.
3. It should possess good dielectric qualities.
4. It should be completely resistant to mineral acids, alkalies, salts, petroleum oils, and refined products such as gasoline and naphtha.
5. It should remain flexible at all temperatures.
6. Soil stress and pipe movement should not affect it.
7. Application should be simple, without unwieldy equipment, and preferably without heat and primer.
8. It should resist penetration by stones, wires, welding rod scraps, and other sharp materials found in the ditches and backfill.
9. It should be able to withstand rough handling without damage.
10. It should be quick setting and fast drying.
11. It should provide permanent protection to the pipe, yet not be prohibitive in cost.
12. The coating must be resistant and impervious to micro-organism attack.

As a general statement, it might be said that any such pipe-protection material must protect the metal against electrolytic corrosion, galvanic corrosion, bacterial corrosion, and chemical attack.

No single material available today is able to meet all the requirements completely. However, it has been the experience of the authors that polyvinyl chloride tapes have most nearly met the points.

Description of polyvinyl chloride

Calcium carbonate (ordinary limestone) is mixed with carbon (coal) and heated to high temperatures, resulting in the formation of calcium carbide and carbon dioxide. Then, the calcium carbide is treated with water resulting in the formation of acetylene and calcium hydroxide, commonly known as slake lime.

Acetylene, a gas, is mixed with hydrogen chloride, also a gas, resulting in vinyl chloride monomer. Vinyl chloride monomer, heated in the presence of a suitable catalyst, gives vinyl chloride polymer, or polyvinyl chloride.

The family of polymers which are related chemically to polyvinyl chloride is shown in the accompanying box.

The first of this family is polyethylene while the second is polyvinyl chloride. It will be noted that polyvinyl chloride appears to be very similar to polyethylene except that one of the hydrogen atoms in the polyethylene molecule has been replaced by a chlorine atom. This results in a marked improvement over some of the properties associated with polyethylene, notably improved tough-

POLYMERS SIMILAR TO POLYVINYL CHLORIDE

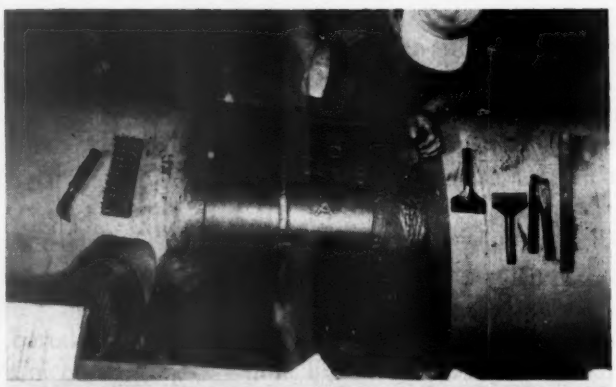
$[-CH_2-CH_2-]_n$
Polyethylene

$[-CH_2-CHCl-]_n$
Polyvinyl Chloride

$[-CH_2-CCl_2-]_n$
Saran

Photos for this article, made on the Kings County Gas Co. *system, Brooklyn, N. Y., were supplied through the courtesy of* Minnesota Mining & Manufacturing Co.

SIX STEPS IN APPLYING



Step 1. Preparing pipe weld for taping. Weld marks are hammered with peening hammers to remove sharp edges.

Step 2. Dirt and scale are removed with wire brushes.

Step 3. Pipe weld is rubbed down with alcohol to remove all traces of dirt and grit.

Ideal Material for Pipe Protection

by George M. Carter, Jr.
Chief Engineer
Minnesota Valley Natural Gas Co.

and T. J. Skotnicki
Technical Service Engineer
Minnesota Mining & Manufacturing Co.

ness, higher melting point and noninflammability.

The third member of this family is polyvinylidene chloride, or saran. Saran can be seen to resemble polyvinyl chloride, except for the fact that another hydrogen atom has been replaced by another chlorine atom. This result is a material which makes very desirable films.

However, at the present moment, the films are limited to a maximum caliper of about 2 mils and do not have the desired stretch characteristics. These shortcomings make this material somewhat unattractive as a pipe-covering material.

Therefore, it appears, at the present time, that polyvinyl chloride has the largest number of properties that make it suitable for this application.

In the manufacture of polyvinyl chloride tapes, the material is compounded with plasticizers and stabilizers. These are chosen for maximum resistance to the action of micro-organisms, acids, alkalis, water, organic solvents and sunlight, yet with consideration for the desirable physical properties.

The laboratories of Minnesota Mining and Manufacturing Co., and other independent investigators, have found that polyvinyl chloride in its pure form is not subject to attack by micro-organisms; however, in several instances, compounded materials containing polyvinyl chloride have been attacked. In most of these instances the attack has been traced almost directly to the compounding ingredients, particularly the plasticizers.

The plasticizers that are particularly subject to attack by various micro-organisms are in general those derived from natural oils and fats—particularly cotton seed, coconut, and castor oils.

The polyvinyl chloride tapes made by the 3M Co., used in the tests and applications—"Scotchwrap" No. 50 and "Scotchwrap" No. 51—do not contain plasticizers of this type.

Once the polyvinyl chloride material has been compounded, it is calendared to an impermeable film and coated on one side with a pressure-sensitive adhesive.

Properties of polyvinyl chloride

The variety of desirable properties possessed by polyvinyl chloride lead to a number of uses that will serve to demonstrate them.

1. *Low water absorption:* Shower curtains, raincoats, waterproof bags, inflated toys.
2. *Good dielectric properties:* House wiring, automobile ignition harnesses.
3. *Resistance to oils, acids, alkalis, and other chemicals:* Chemical resistant paints, tubing and pipes.
4. *Abrasion resistance:* Shoe soles, belting, floor tile.
5. *Toughness and flexibility:* Artificial leather, seat covers, noninflammable upholstery.
6. *Resistance to micro-organism attack:* Direct burial electrical cable.

Standard testing procedures for these tapes are described in ASTM designation D—1000—48T. Properties of these tapes as determined by the tests are shown in an accompanying table.

The *tensile strength* of the tapes is 25 to 60 pounds per inch of width. As the values indicate, the tape does not easily break while being applied as a pipe wrap. In addition, since the stretch

(Continued on page 30)

...LYVINYL CHLORIDE TAPE

Step 4. Short strips of tape are applied over rough spots of weld (date and welder's initials) for extra protection.

Step 5. Taping operation begins with a double layer of tape over the weld.

Step 6. Workmen encircle the pipe with tape until complete weld is covered from shoulder to shoulder of the factory coating.

How Gas Co Improves Leakage Detection in Public Safety Program

by Vernon W. Harper

Superintendent of Distribution Bureau
Portland (Ore.) Gas & Coke Company

PUBLIC safety has become a matter of increasing concern to the gas industry, particularly in the past few years, as a result of several incidents which occurred and the publicity attendant upon them. Our company has always been very concerned about public safety but it was judged that we might very well re-evaluate our policies and practices in this matter to assure ourselves that we were operating in a safe manner. One phase of our program was the matter of leakage detection.

Portland Gas & Coke Company manufactures gas from California residual oils. There are more than 2,500 miles of high and low pressure mains of which some 490 miles are cast iron and the remainder wrought iron or steel. There are 128,000 services in the ground. Only a portion of the steel pipe is coated. The unaccounted-for gas has varied through the years and constituted the basis for budgetary appropriations for leakage elimination. In January 1952, the twelve-months figure for percentage of unaccounted-for to gas sendout was 8.7. The leakage per mile of main (3" equivalent) was 315,000 per year.

The leakage detection program, prior to 1952, consisted of (A) an annual inspection of utility manholes, providing a fair coverage in the business districts where street areas are hard surface from building to building, and (B) a vegetation survey in the high pressure area whereby the high pressure system was covered every two years.

The economics of unaccounted-for gas was the basis of the leakage program and, unless there was a substantial rise in the unaccounted-for, money was generally budgeted for leakage elimination on a hold-even basis. The leakage detection phase was adapted to this principle and search for leaks was only as extensive as the money budgeted provided for. This resulted in detecting and fixing minor leaks in certain areas and being totally unaware of larger leaks elsewhere but the past record on public safety gave no indication that the program was not safe and sound.

Re-evaluation of our leakage detection program indicated that our methods were successful and relatively inexpensive but there was every indication that extent of the program was insufficient to keep ahead of the development of hazardous conditions at all times. In other words what we were doing was satisfactory but we should do more and do it more often. The new program consisted of three operations.

First, instead of an annual utility manhole survey, we would make an annual hard surface survey checking all street openings where the paved area extended from building to building. Included in street openings were manholes, water valve or meter boxes, gas curb boxes, cracks in the pavement, street and curb separations, or any other opening in which it was possible to insert the tube of a combustible gas indicator.

The number of leaks discovered, and the potential hazard of so many of them, re-

(Continued on page 33)

FORMS OF PORTLAND GAS & COKE COMPANY

Shown here are the contents of the forms used by the Portland company. The building leakage survey, right, is completed by the company inspector while he accompanies a Fire Department Inspector, making his annual check of buildings. The Fire Marshal in Portland suggested that Fire Department Inspectors and gas company inspectors survey buildings together.

The leakage inspection report, below, is used in making the hard surface surveys, now made on a semi-annual basis.

LEAKAGE INSPECTION REPORT

Plat sheet ..... Date .....
Address .....
.....
Leak on Main ..... Ser. ..... Damage to ..... Now ..... Later .....
Odor in air...Water box...Curb box...Manhole...Valve box...
Indicator readings: JW ..... MSA ..... After 10 min. airing .....
Est. leakage ..... Type of pavement .....
Probable cause .....
Emergency ..... Special remarks and sketch on reverse side.
Urgent ..... Date .....
Routine ..... Inspector .....

BUILDING LEAKAGE SURVEY

Date ..... Inspector .....

1. Name of building (if any) .....
2. Type of building (office, hotel, warehouse, etc.) .....
3. Address(es) included .....
4. Service sizes: 1-1¼" ..... 2" ..... Other .....
5. Service in use: Yes ..... No .....
6. Curb Cock available: Yes ..... No .....
7. Meters involved: 5B ..... 10B ..... 30B ..... Other .....
8. Meter location .....
9. Leakage check: Make check of service, the tee and riser to meter; also basement as pertinent locations; also any shaftways or upstair spaces adjacent to gas lines where leakage could accumulate.
   (a) Any leakage in basement: No ..... Yes .....
   (b) Any leakage on building piping: No ..... Yes .....
   (c) Any other leakage noted: No ..... Yes .....
   (d) Any other unsafe piping condition found? .....
10. Appliances:
    a) Any unvented (a) water heaters .....
    b) space heaters .....
    c) Any hose connections .....
    d) Any unvented appliances in sleeping rooms .....
11. Additional comments:

Customer Relations Enhanced by High Speed Telephone Center at Con Edison

THE Westchester County service center of Consolidated Edison Company of New York, was recently put in full operation, with special and direct telephone facilities that enable the staff to give immediate attention to customers' inquiries and requests. During business hours, the center receives calls from customers, in the company's Southern division, regarding service requests, billings and emergencies.

The essential purpose of the service center is to enable Con Ed to respond more promptly to customer requests for service. To accomplish this objective the center is equipped with modern telephone and dispatching facilities.

Customers call the center when they want service connected or disconnected; when they have a question regarding their electric or gas bills or accounts; and when they want to report an emergency.

When a call is received to turn service on or off, a clerk in the center fills out an order and places it on a nearby conveyor belt, which carries it to the adjoining office where it is processed.

Should the inquiry concern gas or electric bills, the clerk tries to answer it at once by dialing the bookkeeper in charge of the account and obtaining necessary information. A three-way conference may be held among customer, service clerk and bookkeeper.

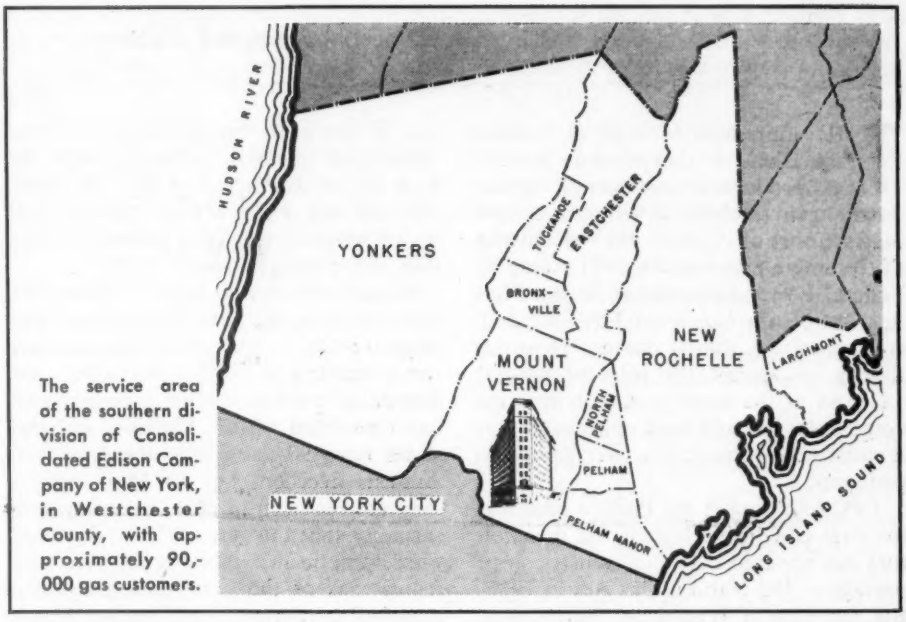
In the event of a gas leak or other emergency, the service clerk makes out an emergency order, places it on a conveyor belt which transports it to the customer service clerical bureau. There it is picked up by a dispatcher and radioed to men in the field for immediate attention.

The service center is not a switchboard; all incoming calls to Con Ed are first received at the regular switchboard on the second floor of the building. Calls to the special number designated for the service center are not answered by the operators, but ring automatically in the service center, and are handled by clerks in that section.

Advantages of the center are numerous, and are beneficial to customers and Con Ed. The customer receives prompt service, while clerks in the company's commercial offices no longer have to handle telephone calls. They can devote their entire time and attention to customers who come in person to the offices. The clerks in the service center, experienced personnel who were carefully selected and trained, give time and attention exclusively to telephone inquiries.

Recently, the service center was equipped with eight drop-leaf sections that can be used as desks by clerks during an emergency. Each clerk wears a telephone head set, and on her desk is a turret with four keys. The first key is for incoming calls; the second for bookkeepers' extensions; the third is an overflow line which shows that one or more customers are waiting, via a green light on the turret; the fourth key, indicated by a red light on the turret, allows the clerk to flash the supervisor for assistance.

The Southern division, with a total population of approximately 330,000 and an estimated 90,000 gas customers, includes Yonkers, Mount Vernon, New Rochelle, Eastchester, Tuckahoe, Bronxville, Larchmont and the Pelhams. The service center is in Con Ed's Mount Vernon office building.



The service area of the southern division of Consolidated Edison Company of New York, in Westchester County, with approximately 90,000 gas customers.

Photos and Art Consolidated Edison Co.

The specially-trained service center clerks receive customers' calls directly and use a vertical-slotted conveyor belt to send written messages directly to the proper department where they are processed. In the photo at the left, below, a clerk is placing a message in the conveyor belt. The picture at the right shows the conveyor passing through the wall and then to the appropriate department. The hinged desks, each with telephone equipment, are standbys for extra service clerks during emergencies.

Regulation of Natural Gas Producers Thrown Into New Confusion by Phillips Decision

by Joseph E. Finley

THE unpredictable state of Federal regulation of independent natural gas producers was turned upside down again recently when the United States Court of Appeals for the District of Columbia reversed the 1951 ruling by Federal Power Commission in the Phillips Petroleum Co. case. FPC decided, two years ago, that it did not have authority to regulate the price of natural gas sold at the well-head, but the new court order has told the Commission that it must take jurisdiction over the independents.

FPC's holding in the Phillips case was the first conclusive test of the question that has hovered over the industry since passage of the Natural Gas Act in 1938. But the state of Wisconsin, the cities of Detroit, Milwaukee and Kansas City, and Wayne county, Michigan, all appealed the FPC ruling to the Court of Appeals. After extensive arguments, and intervention on the FPC side by Phillips and by New Mexico, Oklahoma, and Texas state agencies, the Court, by a 2-to-1 vote, told FPC it had been wrong in its ruling and that the Natural Gas Act gave it the authority to control wellhead prices.

The controversy, now active before FPC and the courts in various forms for thirteen years, is largely a struggle over the meaning of words.

Section 1(b) of the Natural Gas Act said the law applied to, among other things, "the sale in interstate commerce of natural gas for resale for ultimate public consumption for domestic, commercial, industrial, or any other use." But the same Sec. 1(b) also said it did not apply "to the production and gathering of natural gas."

Thus, the major unsettled question confronting the industry, and on which there have been a variety of shifting and conflicting answers, has always been, *are wellhead sales made by independent producers sales in commerce for resale or are they parts of production and gathering?*

With the answer of the Court of Appeals that they are sales in commerce for resale and that, accordingly, Federal Power Commission has the authority to regulate such sales, the only remaining legal step is to take the matter to the United States Supreme Court. Since the Supreme Court will take only about one of ten cases brought before it, the immediate question becomes, will the high court now agree to hear the controversy and make a final, binding ruling on whether Sec. 1(b) permits regulation of the independents?

Practically every lawyer connected with the case, on both sides, thinks the Supreme Court will grant the petitions for a hearing after they are filed. Although at publication time, no petition has been filed (FPC, Phillips, and the states have 90 days from the Court of Appeals decision, late in May, before they are required to file), it is almost a certainty that the case will be taken upward. Important public questions like regulations of the gas industry usually qualify for rulings of the Supreme bench and there is no reason to think that this case, one of the most important ever to arise in the industry, would be rejected.

No decision until 1954

However, the Supreme Court will not be able to rule on whether it will take the case until it convenes again next October. If the justices vote favorably, a few more months will be required before briefs are filed and arguments are held. Then the decision-making process may take several more months, and the gas industry likely will have to wait until April, May, or June of 1954 before it receives the final legal word on whether or not FPC has the authority to regulate prices of sales made by the producing companies like Phillips.

But, as was pointed out in September, 1951 (AMERICAN GAS JOURNAL), there is need for Congressional action to finally settle the matter. Some business sources thought last month that there might be an attempt to get a bill passed, similar to the Kerr Bill in 1950, which was approved by both houses of Congress only to fall before a presidential veto. The Kerr Bill ended the confusion of Section 1(b) of the Act by providing that FPC would not have the authority to regulate prices of sales by independent producers.

However, one of the leading gas authorities in Washington told this writer he was certain Congress would take no action until after the Supreme Court finally settled the issue under the present law. If the Court reverses the Appeals bench and backs FPC, there might no longer be any need for Congressional action. But if it is decided that FPC must take jurisdiction to regulate sales by independent producers, then Congress can deal anew with the situation as it sees fit. Eventually, the elections in 1954 might be the final determining factor.

Reviewing briefly the history of the controversy before it reached the Court of Appeals, FPC ruled in 1940 in *In re Columbian Fuel Corp.*, 2 FPC 200, that it would not take jurisdiction, but this decision was not broad enough to settle the matter as far as FPC was concerned. In a later legal proceeding, FPC won a victory over Peoples Natural Gas Company before the same Court of Appeals for the District of Columbia that has just decided the new Phillips case in a matter involving a claim that FPC did have jurisdiction. In the Peoples ruling, the Appeals court backed FPC's change of heart about its own jurisdiction, and specifically disapproved of the holding in the Columbian Fuel case.

Then, an important decision of the United States Supreme Court in 1947, *Interstate Natural Gas Company v. Federal Power Commission*, 331 U.S. 682, contained language that led many gas men to believe FPC did actually have the power to regulate the wellhead producers. This Interstate ruling was one of the principal matters relied on by the Court of Appeals in the Phillips case to support its holding.

After the Interstate decision, FPC issued its famous Order No. 139 stating that it would not take jurisdiction, pending Congressional action. Then, in 1950, the Kerr Bill was passed and vetoed by President Truman. After this, FPC once again reversed itself in Order No. 154, rescinding No. 139, and indicated that it would take jurisdiction. Then, when it finally decided the Phillips case in 1951, FPC said that Order No. 139 was really the correct interpretation of the Natural Gas Act.

The Court of Appeals, in an opinion by Judge Henry W. Edgerton, said FPC had found that the sales by Phillips were sales in interstate commerce of natural gas for resale. But FPC, in its ruling, decided that these sales were part of the gathering process and were thus exempt from regulation.

In reversing FPC, Judge Edgerton wrote, "We think the Act and the de-

cisions of the Supreme Court permit only one answer. We think the Commission has applied an erroneous rule of law. Phillips' sales to the pipeline companies are not within either the statutory phrase 'the production or gathering of natural gas' or the Supreme Court's paraphrase 'made during the course of production and gathering.' Therefore, Phillips is a 'natural-gas company' within the meaning of the Natural Gas Act and the Commission should fix the rates at which these sales are made."

The Court's interpretation of the confusing words used by the lawmakers in 1938 is important to the entire industry because the reasoning of Edgerton, which was joined by Judge E. Barrett Prettyman, will be the principal argument relied upon in the Supreme Court by Wisconsin and the cities backing regulation. Judge Bennett Champ Clark filed a strong dissent, which, of course, can be utilized by Phillips and FPC in their appeals to the high tribunal.

Complex considerations

Judge Edgerton pointed out that under a Supreme Court decision of 1924, the states could not regulate sales to distributing companies where the gas would go into interstate commerce. The Supreme Court did rule, however, in 1950, in *Cities Service Co. v. Peerless Oil & Gas Co.*, 340 U.S. 179, that states could set minimum wellhead prices in aid of conservation. FPC relied on the Cities Service decision when it made its Phillips ruling, but Judge Edgerton said it did not apply since Phillips' sales are made after the gas has been gathered into trunk lines.

As an aid to determining what the confusing words of the Act were intended to mean, Judge Edgerton looked into the legislative history of the Natural Gas Act. A report of the House Committee on Interstate Commerce in 1937, before the law's enactment, stated that "sales for resale, or so-called wholesale sales, in interstate commerce (for example, sales by producing companies to distributing companies) . . . have been considered to be not local in character . . . and not subject to state regulation. . . . The basic purpose of the present legislation is to occupy this field in which the Supreme Court has held that the States may not act."

Judge Edgerton interpreted this to mean that unless the Natural Gas Act gave FPC authority to regulate sales by independent producers, there could be no regulation of any kind.

Some of the precedent cases

Even more impressive than the report of the House Committee, for Judge Edgerton, were two decisions of the Supreme Court, which, although not ruling on the exact question raised by the Phillips case, came close enough to it to persuade him. The first of these was *Colorado Interstate Gas Co. v. FPC*, 324 U.S. 581 (1945), which involved FPC regulation of the company's production and gathering properties as well as its interstate transmission system, which the Supreme Court approved in strong language.

But the principal decision relied on by the Court, just as it was used by Commissioner Thomas Buchanan when he dissented in the FPC ruling, was the well-known holding in *Interstate Natural Gas Co. v. Federal Power Commission*, 331 U.S. 682 (1947). The Interstate company sold gas which it had gathered and commingled with gas from other producers and sold it to pipeline companies. The Supreme Court, in an unanimous opinion by Chief Justice Fred M. Vinson, held that FPC could regulate Interstate's prices. But again, there were pipeline operations on the part of Interstate involved, and thus, this ruling still did not finally settle the question whether the Commission had the jurisdiction to regulate sales by producers who were engaged solely in production and gathering. And furthermore, in the Interstate ruling, Chief Justice Vinson threw in language that clouded the issue sufficiently that both sides of the Court in the Phillips case argued that the Interstate ruling actually supported their positions.

Still relying heavily upon the Interstate case, Judge Edgerton went on to say that FPC's finding that Phillips' sales were all a part of its gathering business was wrong. Sales made during the course of production and gathering have to be so closely connected with local incidents that FPC cannot step in, according to the Interstate ruling. And when production and gathering have been completed, the law does not exempt sales of the gas, Edgerton concluded.

Two points which were only briefly treated in the majority opinion are of significance to the industry. The Supreme Court decision in *FPC v. Panhandle Eastern Pipe Line Co.*, 337 U.S. 498 (1949), heavily relied upon by the Commission in its 1951 ruling, was passed off in a footnote by Judge Edgerton because that ruling involved the transfers of leases intended for use in production. The second issue barely discussed was whether or not there was an interference with permissible state regulation under the Cities Service Gas case.

But what does the exemption of "production and gathering" from the Natural Gas Act really mean? Judge Clark said the sales of Phillips were a part of production and gathering, and to rule otherwise would reduce the statutory exemption of production and gathering to a hollow shell. The majority said the exemption meant, at least, that FPC would have no control over the drilling and spacing of wells and the like.

Judge Clark critically stated in the first part of his dissent that "The Commission has claimed authority in so many cases in which it did not have a shadow of a claim, that it ought to be encouraged in its latest effort to stick strictly within its jurisdiction."

He argued that "Nothing could be more absurd than to say that production and gathering are exempt but that the final sale by the producer and gatherer is subject to the Act. . . . In my view, the sale is as much part and parcel of the service performed as the labor or the tools which create the service, or the leases by which gas reserves may be transferred from one company to another."

Clark also disputed the majority theory that the Natural Gas Act was designed to cover a gap in regulation, where the states could not act. He said the former Supreme Court cases only denied the states the right to regulate *after* transportation in interstate commerce.

The dissenting judge then met the Interstate ruling head-on. In that decision, FPC had found that the sales were made after the gathering process had been completed and after there had been some transportation in a pipeline transmission system. But in Phillips, the Commission found that there had been no transportation in a transmission system. Then, Judge Clark took a sentence from the Supreme Court Interstate opinion which said, "By the time the sales are consummated, nothing further in the gathering process remains to be done." This, according to Judge Clark, "can mean only that the Court recognized that Interstate's sales were a part of the gathering process, which is precisely what the majority of this Court flatly rejects in the instant case, even though the facts here even more strongly than there suggest sales from gathering lines."

Thus, the war of conflicting words goes on in the courts. The Supreme Court for the first time has the opportunity to clear up the confusion once and for all under the present law. Then, after the Supreme Court acts, if Congress decides to take up the statute once more, it is hoped that the words in the Natural Gas Act can be set out in such a way that their meaning will be certain, that lines will be drawn that will no longer leave lawyers and gas men in doubt, and that long years of troublesome litigation and the costly waste of time and money will be avoided.

The industry deserves to know where it stands.

2 Northwest Gas Company Presidents Ta

MUCH has been said and written about the prospective delivery of natural gas to the Pacific Northwest; more words are piling up in the record of the hearings before Federal Power Commission, in Washington, as the contending pipeline companies present evidence in support of their claims for authority to deliver the much-anticipated gas.

Interest in the outcome is widespread; with the financial world high on the list. Specifically, the New York Society of Security Analysts wanted first-hand information on which members can, in part, base their opinions and recommendations when the necessary financing becomes imminent. Two gas utility presi-

First—

N. HENRY GELLERT said

THE NATURAL GAS PROJECT for the Pacific Northwest will involve more than a billion dollars during the 20 years for which a pipeline will be financed. The pipeline, laterals, and gathering system will cost upward of $150,000,000; the utility conversion costs will amount approximately to another $150,000,000; and the domestic and industrial combustion equipment sold to customers will almost amount to another $150,000,000.

The quantity of gas the utilities and industrial users will consume is estimated at a minimum of 2 trillion cubic feet, and a maximum of 3 trillion. At 35¢ per thousand cubic feet the bill will total between $700,000,000 and $1,050,000,000.

N. Henry Gellert

Of all these sums $800,000,000 to $1,150,000,000 of American money will be spent either in Canada or the United States, depending on the source of gas supply. The likelihood is that it will be nearer to the higher figure. . . . We propose to discuss . . . the question of American public interest in this vast sum.

In a brief submitted . . . to Federal Power Commission . . . we laid down seven basic conditions necessary to protect our interests, and those of our investors and customers, if we were to convert to the use of natural gas.

1. Unquestioned and proven reserves adequate to take care of the pipeline's and the market's requirements for a minimum period of 25 years, approximately 2-to-2½ trillion cubic feet.

2. Reserves to be located in optimum gas-producing areas where there is a real possibility of securing natural gas for a term of an additional 20 years or more after the termination of the first contract period.

3. The pipeline must come over an easily accessible all-weather route . . . so that there will be no major interruptions of gas service for long durations. . . .

4. If the gas comes from a foreign country, a guarantee, by treaty, that there will be no curtailment of our contracted-for gas supply for the benefit of foreign customers, whether connected to the line or not. And that treaty must provide also a guarantee that the contracted cost of gas shall not be changed without sanction of FPC.

5. The pipeline shall serve all the important cities of the United States Pacific Northwest, and the city gate price shall be equal for the same load factor to all . . . Pacific Northwest distributors served by the pipeline without preferential treatment to any one. . . .

6. The line shall be the shortest possible under the above circumstances so that its cost may be such as to make available to us the lowest possible priced gas. . . .

7. A full disclosure shall be made to us of all contemplated and executed contracts for gas supply, together with engineering details of the proposed route and the estimates of the cost of the pipeline, so that we may determine for ourselves the accuracy of the quoted price of gas. . . .

Says Westcoast can't do

At that time we were convinced the line contemplated by Westcoast Transmission Company fulfilled none of these conditions. We were convinced from the evidence submitted to FPC that:

1. The Peace River area had insufficient gas for a 20-year supply to the Pacific Northwest.

2. There were no promising large reserves in the Peace River area to supply the pipeline after the initial 20 years.

3. The proposed route of the pipeline was difficult for construction and precarious for maintenance.

4. The laws of Canada made impossible any assurance of continuous and adequate gas supply, or the policing of the price of gas to us by FPC.

5. The pipeline could not, or would not, serve all the important cities of the Pacific Northwest with or without preferential treatment to any one of them.

6. The pipeline was not the shortest line out of Canada.

7. Nor were all the facts concerning it being fully disclosed to us or to FPC.

Since that statement was first broadcast there has been a frantic drilling program in the Peace River area which has produced more gas and extended the reserves. In addition, the Minister of Trade and Commerce of the Canadian Government, has changed the one year gas export permit to a 22-year permit, under an amendment of the regulations respecting the exportation of electricity and fluid, made by the Governor General in Council.

As for the reserves, their adequacy is still to be established by cross-examination before FPC, and we are not at this moment convinced that they will stand up under such an examination.

Regarding the adequacy of a 22-year export permit . . . more. . . .

All the other 5 objections exist now, as they did before. . . .

So much confusion has been generated either purposely or by chance . . . that we will attempt to dissipate some of the fog of contradiction.

Our counterpart in Portland, Oregon, which erroneously prefaces many of its statements with the claim that it will use 38% of the gas supplied by the pipeline, has contended from the outset that it was neutral in the controversy. It is a fact, however, that it has been adverse to Texas or New Mexico gas from the outset, even as far back as 2 years ago. It has been neutral only as between gas from the Pincher Creek area in Canada, and gas from the Peace River area in Canada.

Sees captive market

Its choice of Peace River gas is no choice at all. It has been astride two horses at once, both Canadian, and the Canadian Government has removed one of them from under it. Our friends have simply fallen into the saddle of the other, and their customers have been carried off as a captive market, just as we predicted they would be.

Our objection is to being carried off as captives also; and we are still hopeful that the other gas companies of the region will also struggle. . . .

The decision of Portland Gas & Coke Co. to throw its weight to Westcoast Transmission Company does not surprise those of us who have been aware of the situation for some time. . . .

Therefore, the only new dynamic change in the pipeline situation is the 22-year permit, which our objections have apparently wrested from the Minister of Trade and Commerce.

But, before I analyze the Electricity and Fluid Exportation Act and the regulations under which the 22-year permit to Westcoast was granted, I must refer to the Bechtel report, to which Charles H. Gueffroy, president of Portland Gas & Coke Co. referred when he made his statement to FPC. . . . He called the report "impartial and objective," and the Bechtel organization refers to the report as "impartial."

We have never been supplied with a copy of the Bechtel report . . . nor has the report been offered in evidence before FPC.

But we have a copy of it, and we have carefully read it and scrutinized it. Because Bechtel Corporation are contractors, and very much involved in construction in Canada, we are not convinced that their report is either impartial or objective. For that reason we . . . have engaged Commonwealth Services Inc., consulting engi-

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Opposing Stands on Prospective Reserves

dents from the Northwest were invited to address two meetings of the analysts.

N. Henry Gellert, president, Seattle Gas Co., spoke to them in early May and a month later they heard C. H. Gueffroy, president, Portland Gas & Coke Co.

Mr. Gellert took a strong stand in opposition to importing gas from the Canadian fields in the provinces of Alberta and British Columbia. He favors bringing the gas from fields in New Mexico and Wyoming.

It was with no less vigor that Mr. Gueffroy favored the importation of the Canadian gas. He presented his viewpoint of the advantages of that source of supply over the reserves in the states of New Mexico and Wyoming.

Then—

C. H. GUEFFROY said

MR. N. HENRY GELLERT, president of the Seattle Gas Company, when he appeared before you . . . made several misstatements which I am compelled to correct; and he expressed a point of view as to trade relations between the United States and our neighbor to the North which seems to me blatant nonsense.

Please understand that I am not assailing Mr. Gellert personally. He is an extremely competent person, and he and I have collaborated satisfactorily in the past, as I hope we shall be able to do in the future. But in this particular instance he is thoroughly wrong. And Mr. Gellert is quite capable of being wrong, as he was, for example, in a 1948 public statement to the effect that the manufactured gas companies in the Pacific Northwest were facing starvation. Since that time, my Company has reached new high levels of output and earnings, and today we face the future enjoying very real financial stability and the confidence of our security holders.

C. H. Gueffroy

. . . Perhaps his most important observation, an apparent summary of his attitude toward American economic collaboration with Canada, was this:

> We are foreigners to Canada, and we, as an American public utility, are unwilling to become an economic vassal of a foreign power.

Now that, is tripe.

Are we economic vassals of Canada because we are dependent upon that thriving young nation for 90% of our nickel, for 75% of our wood pulp, for 80% of our newsprint? Are we Canada's economic and military serfs because Canada provides such a large part of the basic raw materials with which we are producing the atomic armament . . . ?

Is Mr. Gellert unhappy about 3,000 miles of unfortified boundary line across which we and Canada exchange an annual volume of trade which now exceeds five billion dollars? It is bad that, in 1952, 54% of Canada's foreign trade was with the United States, that 73.8% of Canada's total 1952 imports came from this country? Can Mr. Gellert be in pain because Canada is by far our most important customer, taking 20% of all our foreign trade?

If these statistics about a complementary, largely non-competitive trade relationship distress Mr. Gellert, I can assure him that they are not viewed with alarm in his own Seattle. For certainly if 20% of the entire nation's foreign trade is with Canada, the Canadian proportion of Seattle's own trade must reach a much higher figure.

Gellert contracted for Canadian gas

. . . On November 3, 1951, Mr. Gellert and I executed on behalf of our respective companies, after several weeks of negotiation, detailed contracts with Northwest Natural Gas Company for the purchase of a supply of natural gas from the Pincher Creek field in southern Alberta. These contracts could not be carried out because the Northwest Natural people were unable to obtain an export license, but Mr. Gellert was not worried at that time. . . . I am sure he thought, just as I did, that we were acting in the best interests of our customers and our investors when we sought a share in one of Canada's most valuable natural resources.

. . . And we still are talking about clean, convenient, economical Canadian natural gas. That hasn't changed, even though it will come from another field. But Henry has changed—into a proud, loud, passionate patriot who, months *after* he had committed himself to the Pacific Northwest pipeline and San Juan gas announces that *he* has engaged Commonwealth Services Inc., to make a "truly objective" study of the situation.

At least it must be said that my associates and I engaged competent experts and had the benefit of their reports *before* we arrived at our conclusions. . . .

Mr. Gellert had this to say about us [Portland Gas & Coke Co] in his talk. . .

> Our counterpart in Oregon, which erroneously prefaces many of its statements with the claim that it will use 38% of the gas supplied by the pipeline, has contended from the outset that it was neutral in the controversy. It is a fact, however, that it has been adverse to Texas or New Mexico gas from the outset, even as far back as two years ago. It has been neutral only as between gas from the Pincher Creek area in Canada and gas from the Peace River area in Canada.

That entire paragraph just isn't so. Our wholly factual claim, based upon market estimates filed with Federal Power Commission, was that our purchases would be 38% of the volume sold to *distributing companies* and 25% of the total volume of gas sold for all purposes in the Pacific Northwest. That was our statement to FPC, and I am glad to repeat it here. . . .

Please consider next Mr. Gellert's suggestion that we have not been open minded as to the source of gas for our area. The fact is that he announced his support of the Pacific Northwest Pipeline Corporation's project more than a year ago, when no one had the faintest idea what the gas would cost, and he has blindly supported that project since that time, although the project as presently contemplated has been radically changed from the plans of a year ago. By way of contrast, we continued negotiations with each group independently and as late as January, 1953, we requested assurance from the president of Pacific Northwest Pipeline Corporation that his company would agree not to divorce its production operations from transmission, an assurance we have never received.

Our own decision to support the project of the Westcoast Transmission companies was not reached until our engineers and analysts had an opportunity to examine the hundreds of exhibits and more than 8,000 pages of testimony submitted by the applicants to FPC, and after we obtained outside engineering opinions. That decision was made on April 13, and on the following day we communicated it to FPC.

Seattle gas rate above Portland

As for Portland Gas & Coke Co. being the "Oregon counterpart" of Seattle Gas, it would be well for Seattle if that were true. The fact is that the average rate received by the Seattle Company for its gas is 41% higher than ours. Low rates sell service, and our volume of gas sold in 1952 was 147% higher than Seattle's. Yes, and it went to 52,000 more customers.

. . . natural gas can succeed only as a volume business with heavy space-heating and industrial loads, and public acceptance is overwhelmingly important. We have nearly 26,000 space-heating customers, as compared with 8,200 in Seattle, and we must both keep that service and greatly expand it. Therefore we have insisted that natural gas be brought to us at a cost low enough to be of real benefit to our area, not merely substituted for manufactured gas at the same cost to consumers, which is what has happened in other parts of the country and which clearly would not be feasible in the Pacific Northwest. And if we are hard bargainers, we are proud of it, because we are attempting conscientiously to serve the best interests of our rate payers and our security holders.

Perhaps Mr. Gellert has been deluded into thinking that because his rates presently are high, he can afford to pay more for a United States supply of natural gas. However, that *is* a delusion, for competitive

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Markets Still in a State of Flux

Recovery Probably Will Be Slow

by John F. Falvey
Financial Editor

THE weight of new corporate offerings has combined with Treasury policies and with other factors to create an anomaly in both the bond and stock markets.

John F. Falvey

At the time of this writing the yield obtainable on the 200-stock common share index compiled by Moody's Investors' Service averaged 5.51%, while the corporate bond average prepared by the same organization gave a yield of 3.63%.

Although this spells a 52% greater return on the common stocks than on the bonds, it is significant that one of the nation's larger natural gas utility companies recently was forced to reject a single competitive bid for its "A" rated bonds which would have spelled an interest cost to the company of close to 5%.

This is a margin only 10% below the average common stock yield—too close a margin for investment comfort considering the lower grade bonds and the preferred stocks which reside between the two types of security.

Both bonds and common stocks are in something of a state of shock. No great volume of bids is available for either type of security and an offering of any dimension is likely to cause serious market unsettlement for both.

Yields on bonds currently range anywhere from 12% to 17% above those which prevailed at the 1952 year-end. This is due to temporary willingness of the Treasury Department to let the market for Governments seek its own level as well as to the host of new corporate offerings which have been finding their way to market. We say 'temporary' because the Treasury seemingly has recognized the terrific and unsatisfactory impact which its policy of practically taking whatever interest rate we can get has had upon the market for all classes of bonds.

Terminating the period of so-called 'easy money' is admitted by close observers of the Government bond market to be a step in the right direction. 'But the work of 20 years cannot be undone overnight,' they warn, as they condemn the abrupt manner in which the Treasury attempted to restore the bond market to a free basis.

That the Treasury is thinking along the same lines is indicated in its recent recognition of the fact that it is expensive for itself and for the prospective buyers of its bonds to endeavor to compete in the market for long term funds during a period in which private borrowers are tapping the entire supply of available investment funds.

For the Treasury to continue doing so, moreover, might spell a recurrence of money market conditions which disrupted the economy so severely during the 1920s.

Evidencing the Treasury's recognition of the adverse market situation which it had created during recent months is its current action limiting itself to very short-term offerings, both for new money and for refunding of outstanding issues. There has been no further effort to achieve a better balance in public debt securities, paying whatever interest rates might be necessary to attract the required funds.

It is this turn-about in the Treasury's thinking which affords basis for the belief that the present unsettlement in the bond market may be only a temporary development which may be alleviated later in the year as the market is permitted to adjust itself.

Not all of the fault for the bond market break can be laid at the door of Treasury, however; some of the blame must be directed to corporate management, which literally stampeded to market in its quest for funds estimated several months ago (AMERICAN GAS JOURNAL, May 1953) at $800 million.

When and as the bond market rights itself, it would behoove utility and other corporate management to study the condition of the market and the volume of new offerings scheduled likely to arrive, before moving to raise funds with which to fund bank loans arranged as a temporary expedient to finance needed new construction. To do otherwise would be to risk a repetition of the bad situation now in evidence.

Several reasons may be cited for the severe reaction which has taken place in prices for common stocks. Loss of confidence resulting from the unfavorable acceptance accorded new bond issues has been of no help whatever. But the weight of fears concerning a possible recession in business likely to result from a truce in Korea and from defense order cut-

(Continued on page 34)

INDEX OF YIELDS : SELECTED UTILITIES STOCKS

	June 1953	May 1953	Apr. 1953	Mar. 1953	Feb. 1953	Jan. 1953	Dec. 1952	Nov. 1952	Oct. 1952	Sept. 1952	Aug. 1952	July 1952
Natural Gas Transmission Companies	4.72%	4.34%	4.18%	4.04%	3.95%	4.04%	4.04%	4.14%	4.48%	4.44%	4.10%	4.01%
Natural Gas Transmission & Distribution Companies	5.55	5.28	5.06	4.91	4.91	5.02	4.99	5.14	5.47	5.45	5.30	5.26
Manufactured & Mixed Gas Companies	5.08	4.80	4.73	4.63	4.65	4.87	4.83	5.00	5.04	4.80	4.70	4.89
Class "A" Electric Companies	5.53	5.18	5.14	4.97	5.05	5.08	5.10	5.20	5.40	5.39	5.40	5.49
Class "B" Electric Companies	5.68	5.35	5.06	4.93	5.08	5.19	5.08	5.19	5.47	5.42	5.46	5.51

This is a straight arithmetical index of comparative yields obtainable on a selected group of gas and electric utility industry common stocks.

The companies comprising this index have been selected by the AMERICAN GAS JOURNAL as providing a representative cross-section of each industry, from the standpoint of geographical diversification and of the relative importance of the individual companies in their areas.

No effort has been made to weight the average to give effect to changes in capitalization or in dividend rates because the yields afforded on the issues reflect such changes. The index is designed to show the rate of return and not necessarily market movements on the stocks comprising it.

This index is compiled from: natural gas transmission companies, 5; natural gas transmission and distribution companies, 5; manufactured and mixed gas companies, 4; class "A" electric companies, 4; class "B" electric companies, 5.

Gas Cuts Glassware Heating Costs in Half and Doubles Production

by Everett V. K. Schutt

Industrial Gas Engineer
Central Hudson Gas & Electric Co.

MANY of the advantages of gas are demonstrated at Bernardi Decorators, Inc., Newburgh, N. Y. A quality-line of glassware, including highball and cocktail glasses, pitchers, vases, souvenir glasses and various novelties is produced at this plant. In firing the decorations on the ware, it is important that the atmosphere in the oven be such that the colors are not affected. The heat must be adequate and at the same time uniformly controlled. To make the operation profitable, costs must be kept to a minimum.

All these results have been obtained by the use of radiant gas burners. In 1946, the company started with an oven, or lehr, using ordinary drilled pipe gas burners. It was soon found that many of the colors were affected.

A muffle-type oven was considered but the cost was high and delivery time was uncertain. Therefore, electric heaters were installed. Cost for electricity, even with limited production, ran $400 to $500 per month. To make matters worse, the electric units burned out frequently, necessitating shut-downs and a constant expense for replacement units.

The owner was anxious to go back to gas if the difficulties with colors could be eliminated in his existing oven. Despite advice to the effect that direct firing with gas burners would not be practical, he called our company. Fortunately, we were familiar with installations of radiant gas burners for direct firing of glassware.

In these lehrs, the superior combustion of the radiant-type burner had eliminated troubles due to traces of imperfectly burned fuel. A quick installation of radiant burners was made over a weekend. No trouble with colors was encountered and production proceeded without interruption.

Since last summer an increasing volume of business made another lehr necessary. This was constructed of insulating material poured in forms. These are laid up on an angle iron frame. 8″ of insulation is provided for the firing chamber and 6″ for the balance of the oven. A wire belt with 65′ of travel carries the work through the oven which is 40′ in length. Four Red-Ray radiant gas burners are in the firing chamber.

An automatic temperature controller is used and a uniform temperature, in excess of 900° F, is maintained.

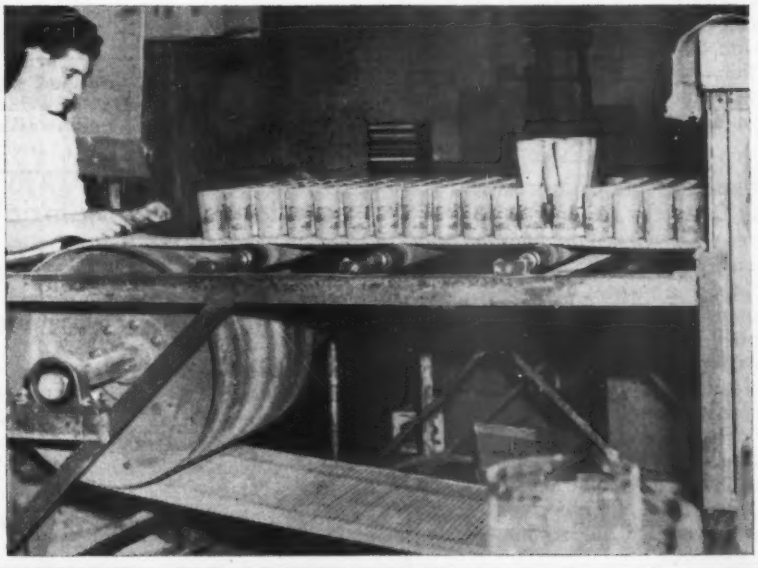
The owner states that while his production has been doubled, his previous cost of $400 to $500 per month with electricity has been reduced to an average of $200 per month with gas. His preheat time is reduced, repair shutdowns avoided, maintenance is negligible.

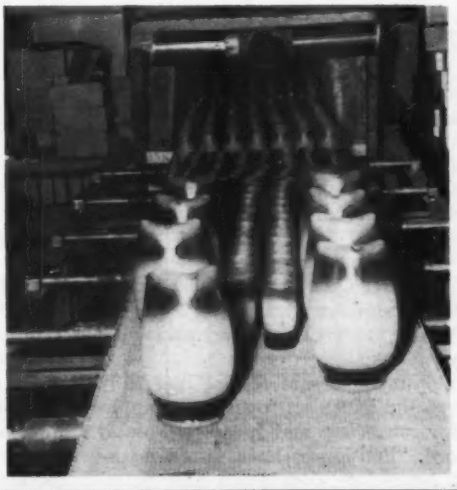
The variety of products at this plant is such that they operate at full capacity throughout the entire year. It might be expected that upon completion of Christmas orders there would be a dull period. Here, they immediately start working on goods for the resort trade. Glasses and vases are produced with special designs for each state and for the various tourist centers. These have wide distribution and constitute an important portion of the yearly business. Customers furnish pictures or ideas for the designs. Artists and photographers then make up the final design. Screen printing is used, the glassware being handled in jigs which permit handling of a surprising volume of work. The screens are conveniently stored so that repeat orders can be processed at any time. A staff of artists is constantly busy hand-decorating the finer pieces.

Among the wide variety of beautiful products, pastel glassware attracts particular attention. Applied by automatic sprays, it is processed in the same oven.

When you admire beautifully decorated glassware or enjoy a drink from an attractive glass, remember that gas plays an important part not only in producing the original piece but also in changing it from a commonplace item to an article of beauty.

The economy and efficiency of gas creates a broader market for the products, adding a little more pleasure to a greater number of people.





Left, decorated glassware entering the oven for color firing by radiant gas burners. Below, finished glassware coming out of the oven.

FEDERAL POWER COMMISSION

Northwest Natural Withdraws from Pacific NW Hassel

Northwest Natural Gas Co. has, in effect, bowed out as a contender to pipe natural gas to Washington and Oregon. Arthur Logan, attorney for Northwest, announced at the hearing on applications for authority to bring the gas into the Pacific Northwest, that his company had withdrawn its application for a permit to export gas from Alberta.

Northwest Natural's action in withdrawing from the Pacific Northwest picture was because of its inability to get a source of supply. Without the necessary supply, it could hardly be considered by the hearing examiner as a qualified applicant.

Hope Natural Applies for Authority to Develop Storage Pool

Hope Natural Gas Co., has asked for authority to develop an underground natural gas storage pool in Lewis and Harrison counties, W. Va. The application says the proposed project would cost about $1,236,000, and that the storage capacity of the pool would be approximately 20 billion cf. The pool, which has long been used by Hope for the production of gas, would be called the Kennedy Storage Area.

Investigation of Northern Natural Terminated

The Commission terminated an investigation, instituted last November, of the transfer and sale by Northern Natural Gas Co. of all its gas leases and wells to a wholly-owned subsidiary, Northern Natural Gas Producing Co.

The Commission said its object in initiating the proceeding was to test the validity of the purchase contracts with a view of determining if Northern's gas supply had been impaired. The inquiry "failed to disclose that Northern actually had alienated any part of its gas reserves in a manner that does not permit Northern to draw on them to the full limit of production allowables."

Coal Group Rebuffed

The Commission denied an application for rehearing of its opinion and order authorizing Permian Basin Pipeline Co., Northern Natural Gas Co. and El Paso Natural Gas Co. to construct pipeline facilities designed to make available ultimately an additional 300 MMcf per day to Northern.

The application for rehearing was filed by the National Coal Association, United Mine Workers of America, Fuels Research Council, Inc., and Chesapeake and Ohio Railway.

The Commission said that it had fully considered the issues set forth in the application for rehearing, and further reviewed the record. "Petitioners have raised no issue not heretofore considered and determined by our decision in these matters or which being now reconsidered warrant a change or modification of our prior opinion and order herein," the FPC asserted.

Mississippi River Fuel in Rate Rise Settlement

The Commission accepted a proposed settlement, including an approximate $5,129,000 increases in the wholesale natural gas rates of Mississippi River Fuel Corp., based on sales in 1952. This proposed settlement was agreed to by the parties, and recommended by the FPC staff, in the Commission proceeding upon an approximate $6,500,000 wholesale natural gas rate increase proposed by Mississippi and made effective upon motion of the company as of April 10, 1953, subject to refund of any amounts found not to be justified.

Mississippi's utility or wholesale customers, and the estimated amounts (based upon actual 1952 sales) of the rate increase in effect as of April 10 subject to refund, and the lower rate increase agreed to and made effective, are:

Purchaser	April 10 Increase	Accepted by FPC
Arkansas Louisiana Gas Co.	$ 182,000	$ 142,000
City of Altheimer, Ark.	5,000	4,000
Fort Smith Gas Corp.	32,000	25,000
MidSouth Gas Co.	391,000	303,000
Public Utilities Co., Crossett, Ark.	23,000	18,000
Missouri Natural Gas Co.	357,000	277,000
Laclede Gas Co.	4,754,000	3,710,000
Illinois Power Co.	700,000	545,000
Union Electric Power Co.	135,000	105,000
Total	$6,579,000	$5,129,000

Under the accepted settlement, Mississippi is to abandon and dismiss promptly two law suits now pending against FPC, on petition for writ of certiorari in the U. S. Supreme Court and on petition for review in the U. S. Court of Appeals for the District of Columbia Circuit, concerning FPC orders issued May 29 and August 4, 1952, rejecting and denying, respectively, earlier rate increase proposals by Mississippi.

FPC Affirms Decision by Presiding Examiner Directing Trunkline Gas Company to Supply Natural Gas to Two Louisiana Communities

The Commission has affirmed a decision directing Trunkline Gas Co. to supply 600 Mcf per day to each of two Louisiana communities which had requested this service.

The decision directs Trunkline to establish connections with the facilities of the towns of Colfax and Boyce, La., and to sell and deliver natural gas to those communities.

Transcontinental Rate Compromise Refused; Open for Renegotiation

The Commission refused to approve a compromise offer by Transcontinental Gas Pipe Line Corp. in a request for a $9,819,000 yearly natural gas rate increase. Seven utilities supplied by Transcontinental asked FPC to consider the compromise, hinged upon their willingness to accept a rate increase calculated to raise Transcontinental's revenues by $6 million a year. Transcontinental objected. FPC left compromise negotiations to Transcontinental and its customers. Eleven of them had objected to the proposal put forward by the seven whose motion was rejected.

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- *Geology
- *Drilling and completion
- *Methods of estimating reserves
- *Chemicals from gas
- *Natural Gas Conservation

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- *Coke oven gas; producer gas, blue gas; carbureted water gas
- *Reformed gas
- *Hi-Btu oil gas
- Interchangeability

LIQUEFIED PETROLEUM GASES
- *Sources, properties and uses

BASIC GAS LAWS
- *Perfect gases
- Supercompressibility

TRANSMISSION
- *Pipe lines
- *Corrosion and pipe protection
- *Compressor stations
- *Gas conditioning
- Flow formulae
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- Pipe coatings and protection methods

GAS STORAGE
- *Methods of storing gas

GAS DISTRIBUTION
- *System design and operation
- *Pressure regulation, part 1
- *Pressure regulation, part 2
- *Leak detection and control
- *Metering
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- *Odorization
- Customer service

GAS UTILIZATION
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- *Competitive fuels
- Domestic
- Commercial
- Industrial
- *Principles of absorption refrigeration

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- *Corporate structure
- *Public utility regulation
- *Public relations
- Theories of rate making
- Rights-of-way

GLOSSARY
- *Ab-to-Ex

***Indicates chapters published since January 1, 1951; available without charge to new subscribers to American Gas Journal.**

How to Use the Material

American Gas Fundamentals *is a comprehensive compilation of basic gas facts to guide any gas utility employee toward a broader understanding of the industry as a whole.*

The series is designed to be removed from each current issue of AMERICAN GAS JOURNAL *and filed in a ring binder where it may be accumulated into a text book of permanent usefulness. Material should be filed under the major subject head appearing in the upper right hand box at the head of each chapter.*

The Competitive Fuels—Part 2

[The subject of competitive fuels has been divided into two parts; the first part appeared in the June issue and covered energy production, recoverable energy reserves, energy consumption, and thermal efficiencies of competitive fuels. Part 2 covers comparative costs and future trends of competitive fuels. The subject matter in each part is not to be considered as a separate chapter. Therefore, readers are urged to start with Part 1 to obtain subject-matter continuity.]

Comparative Costs of Competitive Fuels

Costs of burning competitive fuels vary widely among fuel burning units, and are dependent upon many variables, which should be taken into consideration if accurate analyses of costs are to be obtained. Variables that should be considered in an accurate cost analysis are: 1. Thermal efficiency of the fuel burning unit; 2. Variations in heat load demand required from the unit; 3. Delivered cost of fuel; 4. Labor, maintenance, and amortization costs of the unit. Space in this chapter does not permit the fuel cost analysis for every individual type of installation with consideration given to these variables.

A simplified analysis will be used to compare the costs of competitive fuels. Calculations of competitive fuel costs which follow have been made using weighted average thermal efficiencies of coal, oil and gas (Table 6), coupled with average fuel heat values (Table 1) to produce equal thermal output from a unit. The four variables above were used in this analysis, except labor, maintenance, and amortization costs of the fuel burning unit, since the thermal efficiencies used were weighted for different types of fuel burning units and considered variations in heat load demand.

Comparative costs of competitive fuels for domestic and commercial space heating are shown in Figure 1. Values for these curves were calculated to give equal thermal output using weighted average load efficiencies in Table 6 and average fuel heat values in Table 1, and should not be used for installations having different thermal efficiencies, or using fuels with different heat values.

Average value of natural gas used for domestic heating during 1951 in the U. S. was $0.76/Mcf, and this would compare (Figure 1) with use of bituminous coal at $13.56/T delivered, anthracite at $13.15/T delivered, distillate fuel oil at $0.0895/gal delivered, and kerosene at $0.0875/gal delivered. A delivered fuel price either above

Figure 1.
COMPETITIVE FUEL COSTS FOR DOMESTIC AND COMMERCIAL SPACE HEATING

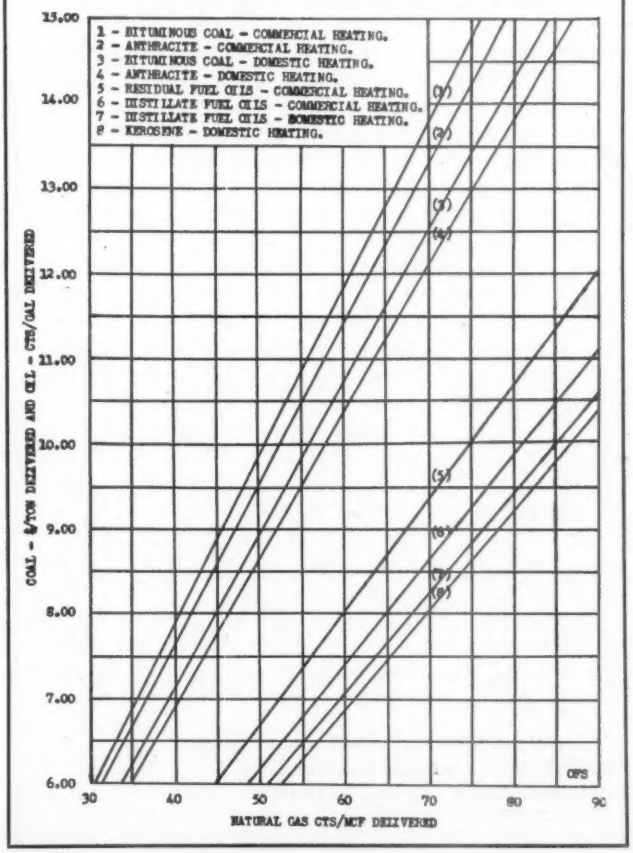
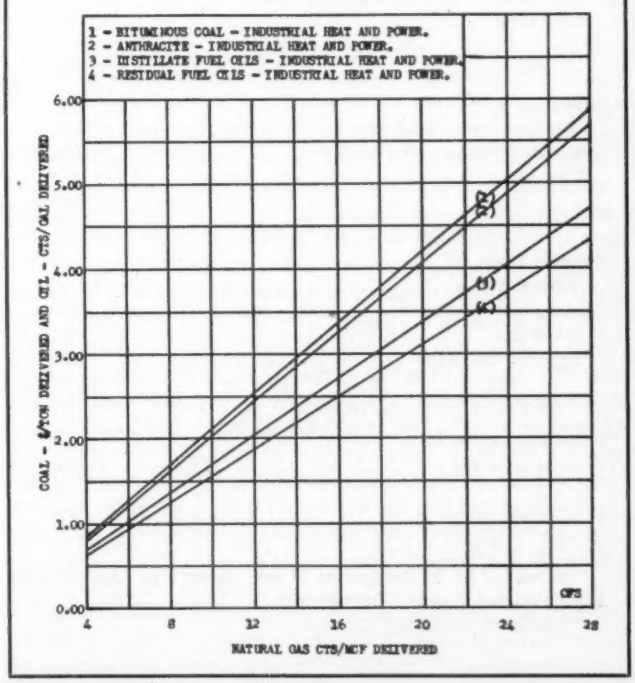

1 - BITUMINOUS COAL - COMMERCIAL HEATING.
2 - ANTHRACITE - COMMERCIAL HEATING.
3 - BITUMINOUS COAL - DOMESTIC HEATING.
4 - ANTHRACITE - DOMESTIC HEATING.
5 - RESIDUAL FUEL OILS - COMMERCIAL HEATING.
6 - DISTILLATE FUEL OILS - COMMERCIAL HEATING.
7 - DISTILLATE FUEL OILS - DOMESTIC HEATING.
8 - KEROSENE - DOMESTIC HEATING.
COAL - $/TON DELIVERED AND OIL - CTS/GAL DELIVERED
NATURAL GAS CTS/MCF DELIVERED
CFS

Figure 2.
COMPETITIVE FUEL COSTS FOR INDUSTRIAL HEAT AND POWER


1 - BITUMINOUS COAL - INDUSTRIAL HEAT AND POWER.
2 - ANTHRACITE - INDUSTRIAL HEAT AND POWER.
3 - DISTILLATE FUEL OILS - INDUSTRIAL HEAT AND POWER.
4 - RESIDUAL FUEL OILS - INDUSTRIAL HEAT AND POWER.
COAL - $/TON DELIVERED AND OIL - CTS/GAL DELIVERED
NATURAL GAS CTS/MCF DELIVERED
CFS

or below the curves in Figure 1, would show a higher or lower fuel bill to the consumer for an equal thermal output. Increased costs of using fluid fuels for domestic heating, in some areas, has been considered economical, since their storage convenience, cleanliness, and ease of temperature control give monetary savings over the utilization of solid fuels, with their accompanying disadvantages of large storage space requirement, dusty residue, and inconvenience of ash removal.

In 1951, the average value received for natural gas sold to commercial consumers in the U. S. was about $0.53/Mcf. Bituminous coal at $10.50/T delivered, anthracite at $10.10/T delivered, residual fuel oil at $0.071/gal delivered, and distillate fuel oil at $0.0655/gal delivered, according to Figure 1, would give equal thermal output at the same cost as natural gas used for commercial heating at $0.53/Mcf delivered.

Comparative cost curves, on the same basis as those in Figure 1, are shown for competitive fuels used in industrial heat and power in Figure 2.

Natural gas used for miscellaneous industrial purposes had an average value of $0.176/Mcf during 1951 in the U. S., which compares (Figure 2) with bituminous coal at $3.70/T delivered, anthracite at $3.60/T delivered, distillate fuel oils at $0.030/gal delivered, and residual fuel oils at $0.0275/gal delivered. Cost of a fuel coupled with its availability, for industrial heat and power, are prerequisites for its selection for this utilization, except in cases where precise temperature control demands the use of fluid fuels.

Future Trends of Competitive Fuels

Maintenance of a high industrial production and domestic economy in the United States assure a large market for all types of fuels. Fuel utilization is expected to increase substantially over our present consumption levels in the next 25 years, and this increase will be gradual in a peace-time economy and rapid in a war-time emergency.

The United States will be able to meet these increased energy demands without prohibitive costs providing consideration is given to our energy resources as a whole. This Nation must exploit fully the interrelationships between various sources of energy, and give consideration to economic and technical advantages of flexibilities in end-use, in distribution, and in drawing on each energy source for its most efficient contribution.

The contribution of coal to the United States' energy demand has decreased about one-fifth in the past 20 years, at a time when our energy requirements nearly doubled. Replacement of coal by oil, gas and water power, in some markets, has been caused by its bulkier handling in transportation, higher prices due to increased labor costs, periodic interruption of supply, and less convenience in its use.

Actual volume of coal consumed is expected to increase in the next 25 years, even though its percentage share of our total energy demands may decrease. Coal will not offer much competition to oil and gas to capture future domestic and commercial heating markets, but increase in consumption will be noted in industrial heat and power, and particularly in electric power generation. Heavy in-

Table 5

U. S. ENERGY CONSUMPTION OF COMPETITIVE FUELS FOR INDUSTRIAL HEAT AND POWER[1]

	MILLIONS OF THERMS			PER CENT OF TOTAL CONSUMPTION		
	1941	1946	1951	1941	1946	1951
Solid Fuels						
Bituminous coal and lignite	53,477	54,212	59,101	58.2	51.2	41.1
Anthracite (Pennsylvania)	1,632	1,606	1,449	1.8	1.5	1.0
Coal coke[2]	700	1,199	1,461	0.7	1.1	1.0
Total	55,809	57,017	62,011	60.7	53.8	43.1
Liquid Fuels						
Distillate fuel oils (Grades 1-4)	969	1,968	3,524	1.1	1.9	2.5
Residual fuel oils (Grades 5-6)	10,484	13,149	17,822	11.4	12.4	12.4
Coal tars	231	138	136	0.3	0.1	0.1
Total	11,684	15,255	21,482	12.8	14.4	15.0
Gaseous Fuels						
Natural gas[3]	18,764	26,426	49,216	20.4	25.0	34.2
Manufactured gas[4]	653	667	776	0.7	0.6	0.5
Mixed gas	202	232	383	0.2	0.2	0.3
Liquefied petroleum gas	94	152	250	0.1	0.2	0.2
Total	19,713	27,477	50,625	21.4	26.0	35.2
Miscellaneous Fuels						
Electrical energy[5]	4,686	6,149	9,731	5.1	5.8	6.7
U. S. Total	91,892	105,898	143,849	100.0	100.0	100.0

[1] Sources: U. S. Bureau of Mines; American Gas Association; Federal Power Commission.
[2] Excludes metallurgical coke.
[3] Excludes use for carbon black and mixed gas.
[4] Includes coke oven gas as fuel.
[5] Includes that used for transportation.

Table 6

THERMAL EFFICIENCIES OF COMPETITIVE FUELS FOR DOMESTIC HEATING, COMMERCIAL HEATING, AND INDUSTRIAL HEAT AND POWER[1]

	Full Load Weighted Average			Weighted Average Load		
	Coal	Oil	Gas	Coal	Oil	Gas
Domestic Heating	57%	69%	78%	53%	66%	74%
Commercial Heating	63%	73%	78%	60%	71%	76%
Industrial Heat, Power	37%	51%	43%	33%	46%	39%

[1] Source: Holaday, *et al.*

dustry in this country is dependent upon coal for its energy supply, and our production of this fuel should be maintained at a high level, to assure ample supplies to take care of a sharp increase in demand in event of a major war.

Production of crude oil in the U. S. is now at a rate of 2.26 billion barrels per year, and in 25 years hence is expected to be twice this amount. Whether this country can maintain this high level of production is a matter of conjecture at the present time. The U. S. proved crude oil reserves are now about 28 billion barrels, and additions to these reserves by new discoveries, extensions and revisions have been made to these reserves in the past few years despite our record high production levels.

Reservoir engineering research has increased the ultimate oil production from existing reservoirs, a factor which has extended and revised our reserves. New geological and geophysical techniques are being applied to oil exploration, and according to estimates made by the American Association of Petroleum Geologists there are still 1,660,000 square miles in the United States considered to have prospects for future production, this is in addition to the 200,000 square miles of producing area.

The U. S. oil industry spends millions of dollars annually in the search for new oil, and only one well of nine wildcat wells discovers a new field. Very few wildcat wells discover a field of sufficient size to supply our national demand for a week or more, in fact, the statistics presented in the 1951 Bulletin of American Association of Petroleum Geologists indicate that only one well out of 991 can be classed in this category.

Wells are now being drilled deeper in search for new oil and gas reserves. There were 29,229 total wells drilled in 1946 of which 15.4 per cent were exploratory wells, while 45,840 total wells were drilled in 1952 and 23 per cent of these were exploratory wells. Of all the wells drilled in 1946, 20.5 per cent were over 5,000 feet deep, and in 1952 the wells in this depth class constituted 29 per cent of the total drilled. The average depth of wells drilled in the United States has continually increased since 1946, being 3,321 feet in that year, 3,454 feet in 1948, 3,680 feet in 1950, and 4,085 feet in 1952.

Deeper drilling is a factor that has materially added to the cost of oil exploration, since the largest expenditures for exploration work has been in sinking exploratory wells. The oil industry has spent millions of dollars in sinking wells below the 12,000 feet depth. Individual wells in this deep drilling class have cost anywhere from $89,000 to more than a million dollars—the average cost being about $250,000. Oil exploration costs and crude oil prices are directly related, both have increased in the last few years, and these will be important future factors in determining exploration activity carried on by the oil industry.

Prospects are favorable in this country for the discovery of petroleum to meet expected demand, providing there exists adequate materials, economic incentive, and favorable climate for private investment. When our crude production starts to dwindle we must depend on more crude imports, and supplementing our supplies with liquid fuels derived from oil shale, coal, and lignite.

The Bureau of Mines, since 1944, has spent about $75 million on construction and operating expenses for their synthetic liquid fuel installations. This program was initiated as a result of war-time shortages of liquid fuels, continued high demand for petroleum products, increasing consumption of foreign oils, and rising costs of finding new domestic sources of petroleum.

A large part of this program is now being curtailed, as it has gained its basic objective of showing how to make liquid fuels from domestic coals and oil shale. The cost of fuels from coal is substantially higher than from petroleum, unless the sale of by-product chemicals is considered. One plant has been built to produce chemicals from coal, and commercial production of synthetic oil from coal would push our coal demands to an even higher level. Large scale production of synthetic oil from coal will not take place in the future, unless there is a dwindling supply of liquid fuels, and the economic incentive is favorable for this conversion.

The Future of Natural Gas

The natural gas industry has had phenomenal growth in the past, in spite of the fact that natural gas has been a regulated fuel competing with unregulated fuels. Marketed production 25 years ago was about 1.5 trillion cu ft, now it is more than 8 trillion cu ft, and in 25 years may be as high as 18-to-20 trillion cu ft.

Future outlook for natural gas parallels that of oil, as future supplies are dependent on oil exploration and the amount of new oil discovered. Natural gas and crude oil production are parallel operations, for natural gas is found underground in the same type reservoirs, either by itself in a *dry* or *wet* condition, or always associated with crude oil in a *wet* condition. Crude oil exploration to meet our increasing demands has uncovered vast reserves of natural gas. The major oil-producing companies of the United States own about 89 per cent of the natural gas reserves and produce about 83 per cent of this fuel.

The U. S. natural gas reserves are now about 197 trillion cu. ft., which are increasing even though production is at a record high, and 6 Mcf are expected to be produced along with each barrel of oil produced. Our natural gas production in the next 25 years could easily be 2-to-2½ times our present production, if the oil production doubles. However, gas gathering costs, due to scattering of producing areas, may be too high to make all this gas available for pipeline distribution.

Now, the natural gas industry must consider the end-use flexibility if our valuable resources of natural gas are to be conserved and used efficiently. Industrial consumption of

[1] Holaday, W. M.; Albright, R. E.; Apjohn, T. L.; and Steffens, L. R.: Fuels—Their Present and Future Utilization, 29th Annual Meeting, A. P. I., Division of Refining, Chicago, Illinois, November 10, 1949.

large volumes of natural gas at low thermal efficiencies and low prices, particularly near producing fields, no longer is necessary. Neither is it necessary to dump large volumes of cheap natural gas to industrial consumers in off-peak seasons, with the natural gas industry's present development of gathering, processing, storage, transportation, and distribution facilities. New industrial contracts at higher prices are helping to correct this situation, permitting the industry to divert more natural gas at favorable prices to uses in which it is superior to other fuels and energy.

Natural gas will be available in this country for a longer time than crude oil, since present proved reserves are larger, and present production methods of gas injection and recycling will extend production after the liquid fuels are produced.

When the production of natural gas starts to dwindle, the gas industry, like the oil industry, must look to new sources. Imports from Canada and Mexico may help extend our reserves, but these will be small as compared to our total demand, and the production of synthetic gas from coal offers possibilities. Methane from coal has already been investigated,[1] with the synthesis gas prepared by reaction of a noncaking coal, or its equivalent, with oxygen and superheated steam in a Lurgi pressure gasifier. The gas produced is cooled and then completely desulfurized in the Rectisol initial purification step. The CO_2 content is simultaneously reduced. Following purification, the gas is passed over a methanizing catalyst to produce a mixture of CH_4, CO_2, and H_2O. This stream is treated by the Rectisol final purification step to remove CO_2, and to dehydrate the gas, which has a heating value of more than 900 Btu/cu ft, and is ready for pipeline delivery. It has been estimated that a plant designed to produce 100 million cu ft/day would require about 31,300 tons of iron and steel and about 1,150 tons of non-ferrous alloys, and an initial plant investment of about $52.5 million. Cost of producing the synthesis gas would be about $0.55/Mcf, when using, at $4.00/T, a noncaking coal or char having a heating value of 26 million Btu/T and containing no tar-forming materials.

Electrical energy production and consumption in the U. S. have paralleled the growth of liquid and gaseous fuels. The production is now about 400 billion kwhr and in the next 25 years may be as high as 1,400 billion kwhr. There still exists in this country possible sites for hydroelectric plants, but the large expansion in electric power generation will be provided by thermal generation. The use of oil and gas in electric power generation has expanded rapidly in the past few years, however, so has the use of coal expanded, and will no doubt supply the bulk of thermal energy for any expansion in the future. Research studies are now under way for using atomic energy for electric power generation, but whether this process becomes commercially feasible in the future depends on the solution of many variables.

Things to Come

A special type of heating and air-conditioning system which can replace competitive fuels, with exception of electrical energy, is the heat pump. This is now being manufactured in limited quantities for use in domestic and industrial space heating and air-conditioning. This system employs refrigeration equipment, in such a manner that in the heating cycle, the cooling coils, or evaporator, absorb heat from an outside medium (air or water) and deliver it, together with the heat equivalent of the work of compression, to the condenser, which in turn gives it up to the space being heated. On the cooling cycle the evaporator coils absorb heat from the conditioned space, and reject it, together with the heat equivalent of the work of compression, to the outside medium. The installment and operating costs of this system are high at the present time, but the consumer has the advantage of both heating and air-conditioning, and in the future these may be used on a wider scale, especially if the equipment and operating costs decline.

Solar energy may, in the remote future, replace competitive fuels for domestic and commercial space heating and industrial heat and power. A large number of research projects are now under way in the study of solar energy. A few installations have used solar energy, yet none of these can compete economically with the conventional sources of energy—coal, oil and gas. A number of scientists have estimated that billions of dollars must be expended on research and development in solar energy, like that spent for atomic energy, if this country is to harness the vast energy from the sun.

[1] Alberts, L. W.; Bardin, J. S.; Berry, D. W.; Jones, H. R.; and Vidt, E. J.: Production of Methane From Coal, *Chemical Engineering Progress*, October, 1952.

This chapter on Competitive Fuels—Part 2 was prepared by Oscar F. Spencer, Associate Professor, Petroleum and Natural Gas Extension, School of Mineral Industries, The Pennsylvania State College.

News of the Gas Industry

Charles E. Bennett Retires From Columbia Gas System

Charles E. Bennett, immediate past president of American Gas Association, retired June 1 as chairman of the board of the Pittsburgh group companies, Columbia Gas System.

"When I went into the gas business in 1915—manufactured gas at that time—it was considered that the prospects for much expansion were limited," he said recently.

"Today it is almost unbelievable to us old-timers the volumes of gas that are sold each year. This boom the industry is experiencing is spectacular beyond our wildest dreams."

Through his position with the Pittsburgh group companies, and close association with AGA, Mr. Bennett aided in promoting many phases of the gas industry's expansion.

Mr. Bennett entered the gas industry in 1915, three years after graduating from the University of Wisconsin.

He served as vice president and general manager of the Binghamton, N. Y., group companies of Columbia from 1920 to 1930 and as president from 1931 to 1935.

Charles E. Bennett cutting birthday cake shortly before his retirement.

He became president of the Pittsburgh group companies in 1935, and served until last December, when he became board chairman.

Norton Co Hit Hard by Tornado

The Norton Company's new six million dollar grinding machine plant suffered damage estimated at over one million dollars in the disastrous tornado which struck Worcester, Mass. on June 9. The new plant was severely hit. The steel decking of the roof was torn off, siding was ripped from the steel framework, windows were blown out and water from broken pipes, broken glass and other debris littered the entire factory area. The cafeteria, which had received an excellence award in May, was described as a mass of rubble.

While no employees were killed at the plant, three died and over 30 were injured in other parts of the city. Eight employees were injured in the plant area.

Immediately after the storm had passed, repair work was begun, and within 62 hours production was resumed at 80% of normal.

The company reports that the service and engineering departments, and grinding machine division employees aided immeasurably in cleaning up debris and restoring services to make possible the rapid return to production.

Trane Co Opens N.D. Sub-office

The Trane Co. has announced the opening of a new sub-office at Fargo, N. D. George W. Robbins, previously located at the company's sales office at St. Paul, Minn., has been appointed manager at the new office.

Also, a new location has been given for the company's Duluth office: 414 Lyceum Bldg., Duluth 2, Minn.

GAS TRAILS ELECTRICITY IN CALIFORNIA GAINS SINCE 1940

Sales of electricity in California since 1940 have developed a wide margin over natural gas, accompanied by a more substantial increase in per-customer utilization than gas, while the expansion of the number of customers is practically a stand-off, with only a slim edge favoring electricity.

"Increased use of underground storage appears to be the trend for the future," E. F. McNaughton, director, utilities division, California Public Utilities Commission, commented before New York Society of Security Analysts, last month, in an address that included a report of the advances by California gas and electric utilities during the 1940-1952 period.

Electric generating capacity in 1956, for the state, is expected to be triple the capacity in 1940, Mr. McNaughton said, and that anticipates a substantial increase over the current capacity.

La Goleta underground gas storage, of Pacific Lighting Gas Supply Co., was pointed out as "one of the finest in the United States." Exploration and development of other storage projects in California are in process.

"There is not now, and never has been, restriction of new or existing services for natural gas for space heating in homes in California," Mr. McNaughton emphasized.

Growth of gas and electric service in California during 1940-1952, presented to the security analysts in chart form, is summarized as

	Natural gas	*Electricity*
Customers	+70%	+74%
Sales	+158%	+191%
Utilization, per-customer	+52%	+67%

Population increase in California, a dominant factor in the enlarged demand during 1940-1950, amounts to 53%, while the increase for all other states combined is 12%,

(Continued on page 31)

Cameron Cardoza Barr

Cameron Cardoza Barr, assistant general superintendent-gas, Consolidated Gas Electric Light and Power Co., Baltimore, died May 11, at the age of 49. He was employed by the Gas and Electric Company in 1929 and was promoted to his present position in 1951.

Fremont L. Lovett

Fremont L. Lovett, 64, president of Rockland Light and Power Co. (N. Y.), and the subsidiary Rockland Electric Co. (N. J.), and Pike County Light & Power Co. (Pa.), died June 13 in Warren, Vt., in a crash of his own plane.

Mr. Lovett began his utility company career as an electrical engineer for the Worcester Electric Light Co. in 1914. In 1921 he became manager of Montpelier and Barre Light and Power Co. He was also manager of Green Mountain Power Co., and worked for the Brockton Gas Light Co., Mass. He became a director of the Brockton Co.

Mr. Lovett joined the Rockland company in 1927 as general manager. In 1936, he became vice president and a director of the company and its subsidiary companies. Early in 1952 he was elected president.

Dean A. Strickland

Dean A. Strickland, general sales manager of the Texas distribution division, United Gas Corp., and former president and director of Southern Gas Association, died May 12. He was 53 years old.

Mr. Strickland was widely known in the industry through his work on committees of American Gas Association and SGA, particularly in the field of sales promotion. He was recognized as a leader in developing new sales techniques and generally credited with an important role in bringing about greater use of gas appliances.

He began his career in the natural gas industry in 1930 when he joined United Gas in Houston as tax and insurance commissioner. In 1934 he was transferred into the sales department and in that same year was promoted to general sales manager.

Glenn T. Thompson

Glenn T. Thompson, manager of the market analysis department, Norge division, Borg-Warner Corp., died May 3, at 44 years of age. Mr. Thompson held his position from the time he joined Norge in 1950. Prior to that he was with the market research department of Hotpoint, Inc. He was a member of Gas Appliance Manufacturers Association.

Polyvinyl Chloride Tape for Pipe Protection

(Continued from page 15)

characteristics are good—175 to 250% —this material yields under soil stress without rupturing, when used for pipe protection.

Another important point is *adhesion.* In testing adhesion qualities, a 1″-wide sample is rolled on a polished steel surface held in the fixed jaws of a machine. One end of the tape sample is turned back 180 degrees on itself, and this turned-back end is put in the movable set of jaws. The required pull to peel back the tape from the polished surface is recorded. Adhesion of the tape, so measured, is 20 to 25 oz. per inch of width. This test essentially measures the adhesion force of a line across the tape width; adhesions of actual tape areas are several-to-many times greater.

This property is desirable in pipe protection to insure a close bond with the protected metal and to inhibit the tendency of the force exerted by corrosion products to separate the protective coating from the pipe.

Dielectric strength is measured by placing one thickness of the tape between the ends of two cylindrical electrodes a ¼″ in diameter and applying an AC voltage which is increased at the rate of 500 v per sec. The equipment automatically shuts down when failure occurs and a voltmeter indicates the highest RMS (root mean square) voltage attained. The dielectric strength of the tapes is 1,000v per mil of thickness.

This test is significant in that it indicates the tape's ability to protect underground pipe from stray current electrolytic corrosion caused by faults in the return circuit of electric railways.

Also, this property is desirable as protection for the covering itself against nearby lightning strokes, grounded high voltage cables and similar faults, which once having punctured the covering, leave the pipe open to subsequent galvanic corrosion.

The *insulation resistance* of the tape is measured by applying a DC voltage across two electrodes 1″ apart, holding a 1″ width of the tape. The measurement is made while the test assembly is, and has been, in an atmosphere of 96% relative humidity for 18 hours. The insulation resistance of these tapes is 200,000 megohms, or 200,000,000,000 ohms. This quality is extremely significant in a pipe-covering because it indicates the ability of the covering to prevent galvanic and electrolytic corrosion.

To measure *moisture vapor transmission,* an open dish containing calcium chloride is covered with the polyvinyl chloride tape. After the sample has been conditioned, the dish is put into a humid atmosphere. After a given period of time, the dish is weighed, and the amount of moisture that has transferred through the tape and has been absorbed by the calcium chloride is determined. The moisture vapor transmission of these tapes is 1.21 to 1.55 grams per 100 sq. in. per 24 hours.

This quality is important in the consideration of a pipe-covering material since under ordinary conditions, moisture is required to corrode iron. Also, most micro-organisms require moisture for their life processes.

Application of tapes

On mill-wrapped pipe that has been double jointed by welding or has welded sections, the first step is to peel back the kraft paper 6″-8″ beyond the usable edge of the mill wrap coating, which has been previously cut back to facilitate welding operations.

Next the mill wrap coating should be feather edged, and the surface of the mill wrap—exposed after the peel-back of the kraft paper—should be wire brushed to present a roughened surface. The surface of the pipe to be wrapped with polyvinyl chloride tape should be cleaned free of rust, welding slag, dirt, grease, oil, soap suds, moisture and other foreign matter. All sharp irregularities that might have resulted from the welding operation should be flattened and peened. Loose mill scale, dirt and rust, should be removed by wire brushing or scraping.

Oil and grease must be removed by wiping with clean rags dipped in a solvent. The rags used for wiping should be discarded at intervals so that no appreciable amount of oil or grease can collect.

The first application of the tape is over the welder's date and initials. The next application is 2 layers of tape around the welding bead. The main wraps of tape can be applied either by starting at one end and working across and back, or by starting at the weld, wrapping to one end and back to the other end, and then back to the weld again. Both methods provide a double wrap.

It is important that the tape wrapping should either butt the end of the kraft paper wrap or a small space should be left exposed between the tape and the kraft paper. The kraft paper gives no protection other than a visual indication of damage to the mill wrapped coating.

In all these applications, the tape should be applied with no more stretch than is imparted to it by unwrapping it from a freely-rotating roll. The last turn however, should be applied with no tension or stretch whatsoever. This is done by unrolling enough tape for the last turn and then cutting off the remaining part of the roll, allowing the tape to relax to its unstretched length before applying. This prevents any tendency to creep due to over-stretching.

HAND WRAPPING

Hand wrapping a ¾″ service T on a 6″ main.

Here are recommendations and observations by Minneapolis Gas Company regarding use of the tapes:

1. No heat is necessary.
2. Clean pipe first with a wire brush and wipe it dry.
3. If pipe is greasy, clean with solvent and wipe off.
4. On painted pipe, clean off loose paint, blisters and dirt. If paint is sticking to pipe, it is not necessary to remove the paint before applying the tape.
5. In wrapping pipe, overlap the tape one-half width so that when finished, there will be a double coat of tape.
6. In going through tight places with a wrapped section, apply additional coat for mechanical protection.
7. Where tape is used for coating on the service in the wall, wrap the pipe in the basement and ease the wrapped portion into place through the wall. Where pipe cannot be inserted from the basement, back the service into the basement enough to wrap the section that will be in the wall, and then ease it into place.
8. Putting wrapped pipe through a tunnel is normally unsatisfactory because the coating is damaged. Do not use taped pipe in these cases. Services in highly corrosive soils should be installed in open ditches.
9. No. 51 tape is recommended for wrapping straight lengths of pipe. It should be applied with normal roll tension only. However, No. 50 tape is recommended for use on fittings and couplings because of its greater conformability. It can be pulled tight enough so it conforms

well to all surfaces of the fitting.

10. Tape will be in 2- or 3-inch rolls.
11. Air blisters in tape should be punctured, put patch over the puncture.
12. Wrapping is protection for the pipe. If it is damaged when put into place, that protection is nullified.
13. Use care on any coating job.
14. Do not use wrapping on pipe to be inserted in casings unless ends of casings have been thoroughly reamed and annular space is great enough to permit taped pipe to pass through casing without damage to the covering.

Coverage data

The accompanying table shows the amount of tape required to cover pipe of any specified length in common diameters. The left hand column shows the size of the pipe in inches, the second column shows the number of square feet per 100 lineal feet of pipe, the third column shows the recommended tape width, and the fourth column shows the minimum of overlap recommended. The fifth column shows the number of squares of tape needed for 100 lineal feet of pipe for minimum overlap, while the sixth column shows the number of squares of tape needed for 100 lineal feet for one-half lap.

Taking six-inch pipe as an example, the chart indicates that the recommended tape width is either four inches or six inches. Minimum overlap is ½ inch in either case. With this overlap, the number of squares is either 1.984 for four-inch or 1.894 for six-inch, indicating that the wider tape is more economical. The number of squares with half-lap is the same—3.472—for either four or six-inch tape. Knowing how much pipe is to be protected, and the number of squares required, the cost can be computed from the price per square.

Summary

While these polyvinyl chloride tapes are suitable for all general pipe covering applications, they are particularly suitable for such applications as welded joints on mill-wrapped pipe, fittings, and short runs. They are also especially adaptable for inaccessible locations such as river crossings, under railroad tracks, through swampy areas, and through "hot spot" runs where spot wrapping is required. Use of this material eliminates the transportation difficulties involved in bringing in over-the-ditch wrapping equipment.

The attempt of the authors has been to demonstrate that polyvinyl chloride tape most nearly approaches the ideal material for pipe protection as outlined previously. And because it is a package material that can be used in the field immediately from the shelf, it is recommended for your consideration.

PIPE COVERAGE DATA

Pipe Size in Inches		Recommended Tape Width	Minimum Tape Overlap	Squares of Tape Needed Per 100 Lineal Feet of Pipe	Squares of Tape Needed Per 100 Lineal Feet of Pipe	Number of Square Feet Per 100 Lineal Feet of Pipe
				Minimum Overlap	Half-Lapped	
ID	OD					
½"	.84"	1"	¼"	.293	.44	22.0
¾"	1.05"	1"	¼"	.367	.55	27.5
1"	1.32"	1" 2"	¼" ⅜"	.461 .426	.692	34.6
1¼"	1.66"	2"	⅜"	.535	.870	43.5
1½"	1.90"	2"	⅜"	.612	.994	49.7
2"	2.38"	2"	⅜"	.767	1.246	62.3
2½"	2.88"	2" 4"	⅜" ½"	.928 .862	1.508	75.4
3"	3.50"	2" 4"	⅜" ½"	1.127 1.047	1.832	91.6
3½"	4.00"	2" 4"	⅜" ½"	1.289 1.197	2.094	104.7
4"	4.50"	2" 4"	⅜" ½"	1.450 1.346	2.356	117.8
4½"	5.00"	4"	½"	1.496	2.618	130.9
5"	5.57"	4"	½"	1.667	2.916	145.8
6"	6.63"	4" 6"	½" ½"	1.984 1.894	3.472	173.6
7"	7.63"	4" 6"	½" ½"	2.282 2.178	3.994	199.7
8"	8.63"	4" 6"	½" ½"	2.582 2.464	4.518	225.9
10"	10.75"	6" 8"	½" ½"	3.070 3.002	5.628	281.4
11"	11.75"	6" 8"	½" ½"	3.356 3.281	6.152	307.6
12"	12.75"	6" 8"	½" ½"	3.641 3.561	6.676	333.8
	14"	6" 8"	½" ½"	3.998 3.909	7.330	366.5
	16"	6" 8"	½" ½"	4.570 4.468	8.378	418.9
	18"	6" 8"	½" ½"	5.141 5.027	9.426	471.3
	20"	6" 8"	½" ½"	5.712 5.585	10.472	523.6
	22"	6" 8"	½" ½"	6.283 6.144	11.520	576.0
	24"	6" 8"	½" ½"	6.817 6.667	12.498	624.9
	26"	6" 8"	½" ½"	7.426 7.261	13.614	680.7
	30"	6" 8"	½" ½"	8.568 8.378	15.708	785.4
	34"	6" 8" 12"	½" ½" ½"	9.710 9.494 9.288	17.802	890.1
	36"	6" 8" 12"	½" ½" ½"	10.281 10.053 9.835	18.850	942.5

News of the Gas Industry

(Continued from page 29)

with the 48-state average swelled to 15% by the California-bulge.

Conservation of natural gas in California, through oil field repressuring, was noted by Mr. McNaughton. The reinjection rate, currently, is higher than 650 MMcf, daily.

"It is thus seen," he said, "that the . . . program takes important quantities of gas from today's markets. Since such gas increases the oil yield and will without doubt ultimately be available for consumption, from the long-term viewpoint it may be regarded as an important augmentation of the state's natural gas resources."

Awards for Mich Gas Families

Richard L. Rosenthal, chairman of the board, Michigan Gas and Electric Co., has announced that the Richard and Hinda Rosenthal Foundation—a non-profit organization—is establishing a program of scholarship awards for high school graduates wishing to pursue education at higher levels. The awards are available only to the children, brothers and sisters of Michigan Gas and Electric Co. employees.

Awards will be made upon the basis of scholastic records in high school, recommendations of school and community leaders and a brief competitive examination to be given the applicants.

E. L. Mills Receives LPGA Award

Ellsworth L. Mills, vice president of Bastian-Blessing Co., was honored recently with the Distinguished Service Award of Liquefied Petroleum Gas Association at its annual convention and trade show in Chicago.

Given once each year, the award is for outstanding service to the association and LP gas industry. It includes a lifetime membership in LPGA.

Mr. Mills, prominent in the association for over 20 years, has been a director since 1937. He initiated the development of many safety and control devices now standard in the industry and is credited with being the first to compile technical, marketing and historical data on the LP gas industry. He has directed the LP gas phase of Bastian-Blessing operations since 1928.

Mr. Mills was honored again at the banquet closing the LPGA convention. He and Lee A. Brand, vice president of Empire Stove Co., were commissioned Kentucky colonels for their contributions to the advancement of the LP gas business in that state.

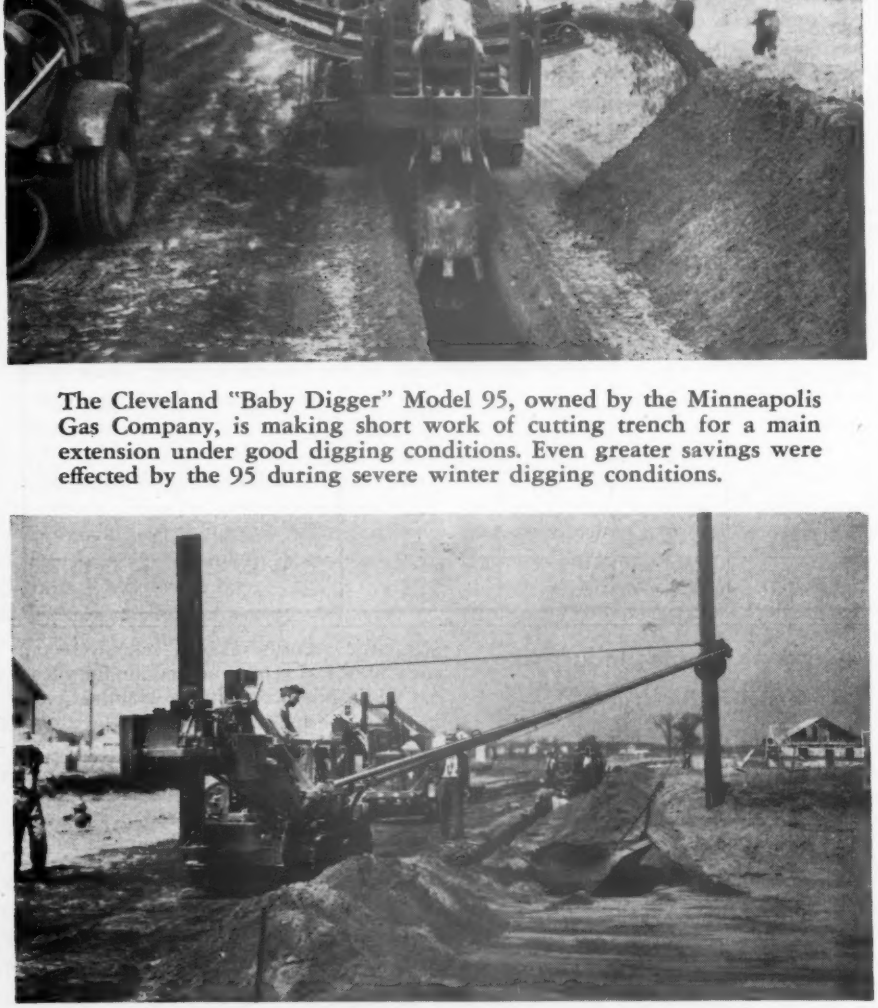
Mr. Brand, who has been in the gas busi-

For fast and efficient production

CLEVELANDS Team-Up

on this gas main extension

The Cleveland "Baby Digger" Model 95, owned by the Minneapolis Gas Company, is making short work of cutting trench for a main extension under good digging conditions. Even greater savings were effected by the 95 during severe winter digging conditions.



Here, the same company's Cleveland Model 80 is speedily and cleanly backfilling the trench shown in the top picture. The 80 is also an excellent pipe layer. When job conditions require backfill compaction, the 80 does an outstanding job with no additional men or equipment necessary.

The
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ness 33 years and with the Empire Stove Co. since 1938, is also chairman of the national committee for LP gas promotion, which directs the industry-wide promotional program.

1,000 Attend Oklahoma Short Course

The University of Oklahoma's oldest short course, the annual three-day session devoted to natural gas measurement and regulations, was held at Norman, Okla., April 21 to 23, and more than a thousand personnel from the gas and oil industry attended. The course, 28 in the series, is sponsored by the University of Oklahoma Engineering College and eight industrial commissions and associations.

About 100 instructors, chiefly specialists from the industry, gave one-hour classes in equipment and methods controlling gas pressure, regulation and measurement.

Thomas F. Cartwright, president of Amarillo Oil Co., was the keynote speaker at the opening session. While referring to the natural gas industry he said, "Not many years from now there will be two jobs in natural gas for everyone there is now. Only future exploration can definitely outline supplies of the industry's raw material, but the potential has been estimated at 500 trillion cubic feet."

Representatives from the gas industry from 35 states, Old Mexico, Canada, France and French Morocco, attended the short course.

Gas Sales Higher In March

Sales of the gas utility industry to ultimate customers during March, 1953, totaled 5,385 million therms, a gain of 0.8% over sales in the same month a year ago, American Gas Association reports. The March AGA index of total gas utility sales is 167.0% of the 1947-1949 average.

For the twelve months ended March 31, 1953, utility gas sales aggregated 53,003 million therms, a new peak in total utility sales. These sales were 6.5% higher than sales in the previous corresponding period.

Natural gas sales in March totaled 5,024 million therms, an increase of 1.1% over sales in March, 1952. The sales of natural gas for the twelve months ended March 31, 1953, amounted to 49,800 million therms, a rise of 6.5%. The AGA index of natural gas sales for March stood at 177.6% of the 1947-1949 average.

Manufactured and mixed gas sales in March totaled 361 million therms, a decline of 4.3% from a year earlier. For the twelve months ended March 31, 1953, manufactured and mixed gas sales were down 4.5% from the comparable 1952 period. March index of manufactured and mixed sales was 91.5% of 1947-1949 base.

New Dept for Genl Controls Co

General Controls Co., Glendale, Cal., reportedly is establishing a new department for study and analysis of customer requirements in the design and development of new products.

W. A. Ray, president and chief engineer, states the new department will supplement the work of regular engineering divisions, and will be headed by H. A. McIntosh. Mr. McIntosh will make his headquarters in the company's main offices.

How Gas Co Improves Leakage Detection in Safety Program

(Continued from page 16)

sulted in a decision to make this inspection on a semi-annual basis. The first inspection will be made in February after we have passed the winter period of maximum pressures on the lines as well as lowest ground temperatures and greatest contraction on the lines. The second inspection will be made in late-Fall, prior to the higher pressures accompanying winter load.

Second, the vegetation survey was to be intensified and made more extensive. This survey is in those areas where open ground exists between the street area and the buildings. The possibility of leakage entering a building is less than in hard surface areas.

Climatic conditions in 400 square mile area served by the company, coupled with the composition of its manufactured gas, contribute notably to the success of the vegetation survey. Leakage will certainly affect the growth of vegetation and the least sign of deadness (dryness) of the green foliage can be quickly detected. Our method of inspection is as follows: experienced distribution personnel are equipped with plat sheets and sent out as inspectors. Each inspector has a driver and travel is at the speed of 7-10 miles per hour. When a suspicious looking spot is noticed the inspector will leave the car and investigate using a dirt auger and a combustible gas indicator. If readings, odor, soil dryness and/or discoloration, or any other evidence reveal that there is a leak a report form is filled out—unless the situation needs immediate attention and then a radio dispatched vehicle will be sent immediately. Leaks of 2-to-3 cubic feet per hour can be located.

Third, we instituted a building survey in the hard surface areas. Originally it was intended to survey only basements as a check on the effectiveness of our hard surface survey. For several reasons it was decided that this survey should be made while accompanied by a member of the Fire Department. The idea was discussed with the Fire Marshal and he was most cooperative and suggested that our inspector accompany a Fire Department Inspector in his annual inspection of buildings in the "fire area." Since the Fire Department Inspector inspects the entire building we expanded our basement survey into a building survey including leakage, condition of meters, housepiping, appliances and anything else that might be out of order.

This inspection seems to have proven the effectiveness of our hard surface survey for, thus far, only one leak has been picked up that could have been discovered in the hard surface survey and, even then, we are not sure the leak existed at the time the hard surface survey was made. On the other hand the inspector has found enough hazardous housepiping to justify the building survey.

This building survey is being extended to all other communities served by our company and everywhere has won the approval and cooperation of the fire departments.

Analysis of the reports revealed that we probably had sufficient men and equipment to do the work if priorities could be established. We reviewed our system of priorities and changed to the following:

1. Any leak reported by the public and any leak reported by company personnel as being hazardous to persons or buildings.
2. Leaks which could result in claims for injuring trees, grass and crops.
3. Leaks of such size that it was economically sound to effect repairs even though no damage could be visualized if the leak continued.
4. Leaks of 10 cubic feet or more per hour in residential areas.
5. Non-hazardous leaks, doing no damage, not potentially dangerous and under 10 cubic feet per hour.

The economics of leakage detection is one of those intangible things that defies accuracy. Our costs for these surveys was $0.36 per mile of main in 1952.

Our omission of barring from our leakage detection program is due mainly to a judgment on our part that we have not yet reached the maturity that we deem requisite to prosecute such a program.

We believe that the actions taken as a result of re-evaluating our leakage detection program are logical approaches and close approximations to the type of public safety we all so earnestly seek.

Adapted from a presentation to Pacific Coast Gas Association Distribution Conference April 1953

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Market Still in a State of Flux

(Continued from page 22)

backs in progress constitute a sizable burden—too great for the market.

One thing seems certain, at least for the time being. The honeymoon in new common stock offerings through rights to stockholders is about over. This is shown in the sharp drop in the percentage of subscriptions for new issues—only 38% in the case of one fairly well-known midwestern utility company—and in the precarious position in which the declining market placed many subscribers who had gone into these new offerings on a 25% margin basis.

The out-of-town banks which have constituted the favorite means of financing these deals have been calling for more margin as the market has turned downward. As a result many shares have found their way to market as the only way to raise the needed funds to preserve the bulk of the investment or to protect the banks' interest in the loans.

The rights offerings worked well while the market was favorable. But they did not afford diversification of stockholders nor addition to stockholder rolls of long-term holders, both desirable developments from the standpoint of the utility. In most cases the commitments were based solely on speculation as a means of increasing return on short term commitments; and in addition they violated the cardinal investment principle—that the return must be considered secondary investment-dollar safety.

In their 10% market decline during the past three months common stocks as a whole have discounted much in the way of the unfavorable factors in the economic outlook—both present and prospective. In attempting to appraise the outlook for the trend of stock prices over the months ahead probably the most important single determinant would be a reduction in taxes. This would permit more corporate income remaining for stockholders and an increased proportion of his own income left for the shareholder, with which he might make additional equity purchases.

A tax cut would mean immeasurably more of an antidote to sagging business and share prices than easier credit, a slow worker in economic priming.

Tax reduction and easier credit are two of the three possibilities mentioned by the Treasury Department as the means it would employ to bolster the economy if the need arose. The third would be a program of public works. But it might be mentioned that the latter was not successful in pump-priming in the 1930s; it is doubtful that it would be more efficacious now.

Nat'l Radiator Opens New Office

The National Radiator Co. has established a new factory branch sales office at 960 W. St. Clair Ave., Cleveland, Ohio. The new branch covers 31 counties in Ohio which formerly were under the jurisdiction of the company's Pittsburgh office.

Robert G. Harrison, sales representative for North Ohio since 1949, has been named manager of the new branch. With him will be Victor L. Edwards and Richard J. McChesney, both graduates of National Radiator's 1953 training course for heating sales engineers.

Also, it was announced that Raymond S. Doherty has been named manager of national packet sales in the heating division of The National Radiator Co.

Mr. Doherty joined the company in 1950. He is a member of ASHVE.

Chambers Names New Distributors

Chambers Corp., Shelbyville, Ind., has announced the appointment of Capitol Wholesalers, division of Consolidated Sales, Inc., as Indiana distributor of console gas ranges.

Also, the company has appointed Bennett Distributors, Columbus, central Ohio distributor for console ranges, and Cousins, Inc., Kansas City, Mo., as distributor covering Eastern Kansas and Western Missouri.

Steady

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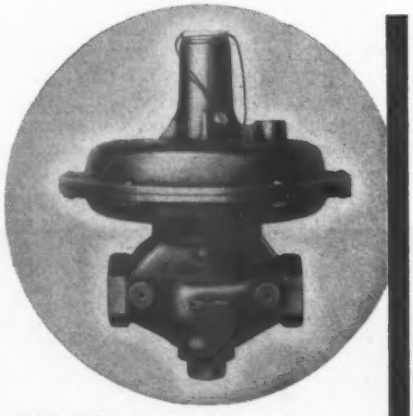

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Northwest Gas Company Presidents Take Opposing Stands

. . . N. HENRY GELLERT said

(Continued from page 20)

neers, to make a truly objective study of both . . . estimates of cost. . . .

International situation reviewed

Now let us confine ourselves . . . to the international aspects of a pipeline from Canada, and its effect on the economy of the Pacific Northwest, and on that of the Nation, as well.

First of all, has the 22-year permit instead of the 1-year permit satisfied our original objections? The answer is, no.

The 22-year permit . . . is subject to . . . conditions, expressly mentioned. . . .

> The licensee shall (a) Conform to any lawful requirement that The Petroleum and Natural Gas Conservation Board of Alberta may stipulate as to gas produced in the Province of Alberta; (b) Conform to any lawful requirement that the Province of British Columbia may stipulate as to gas produced in the Province of British Columbia; (c) Agree to supply gas to any Canadian Consumer without impairment to any existing Canadian service provided that such service can be reasonably and economically supplied. If any application for service is declined by the licensee, it shall forthwith advise the Canadian Government which may make such an order as the circumstances warrant.

And the terms of the Act of itself present an even greater hazard, for "the Governor in Council, may by proclamation . . . impose export duties . . . not exceeding 10¢ per thousand cubic feet on fluid [gas is a fluid by definition within the Act] exported from Canada."

All the talk and explanatory conversation in the world cannot remove the menace which those clauses present to the economy of the Pacific Northwest. The quantity of gas to be delivered and the price to be charged will for 22 years be under the control of the Government of Canada.

The Canadian Government has consistently looked after its own interests. Neither provincial nor federal officials are to be criticized for that. . . .

Suppose, in the amazing and rapid development of British Columbia, natural gas, by making possible a tremendous industrial expansion, accelerates the growth of the province, and a demand for petro-chemical and other industries not now even in the planning, develops there. Does anyone expect the British Columbian Government, or the Federal Government of Canada, to send industry south of the border, to Washington or Oregon, or Idaho, because it has pledged its gas to Seattle and Portland?

That is not what the 22 year permit says, nor the Electricity and Fluid Act. And they are the only authorities which will be effective for the 22 years, unless they are further amended or abrogated by treaty, to guarantee to us both the delivery of gas and the maintenance of the contract price.

How about regulation? We can see nothing in the permit or Act which would allow FPC to regulate a Canadian natural gas pipeline.

Delivery guarantees held worthless

No matter what the contract between American utility companies and the American pipeline company, with its short length of line in the United States, the source of gas will be in Canada, and the 22-year permit directs how that gas shall be used. Any guarantee of delivery by the Canadian pipeline is worthless. . . .

There could be a dozen reasons why Canada may deem it advisable to withhold the gas. It would break no pledges to us, if it did so. . . .

Quite the contrary, it has, by the 22 year permit given to a Canadian company, specifically put us on notice that it reserves the right to cut us off the Canadian gas supply. . . .

What is to prevent the Governor General . . . from assessing a tax of 10¢ a 1,000 on the gas exported to us?

We have heard a lot of claptrap about such a thing pricing the gas out of the market, and that the Canadians would be cutting their own throats.

But as you know, if the pipeline should fail, it would be American investments which would be largely lost. . . .

However, we could be cut off from a substantial part of the gas supply, and the pipeline might continue to be a prosperous venture. For when we talk about the Canadian

(Continued on page 36)

. . . C. H. GUEFFROY said

(Continued from page 21)

fuel prices are no higher in Seattle than they are in Portland.

He [Mr. Gellert] declared that his people had never been supplied with a copy of the Bechtel report by either Portland Gas or the Bechtel Corporation, and then said

> But we have a copy of it, and we have carefully read it and scrutinized it. Because Bechtel Corporation are contractors, and very much involved in construction in Canada, we are not convinced that their report is either impartial or objective.

. . . we supplied a copy of the Bechtel report to Seattle Gas Company and other gas distributors on April 23, and it was discussed with representatives of Seattle Gas May 5 . . . the important part of the Gellert statement . . . is its gratuitous and wholly unwarranted reflection upon the good faith and professional standing of Bechtel Corporation.

. . . Bechtel is familiar with rights of way and terrain in the Rocky Mountain area and in Alberta and British Columbia and has dealt with actual pipeline construction costs in those regions. But the Bechtel Corporation's identification with the Arabian oil lines, the Big Inch lines and many other pipeline projects in the United States should have provided sufficient evidence of Bechtel's qualifications even for Mr. Gellert. . . . Please turn with me again to the complementary and mutually profitable inter-dependence of the United States and Canada. . . .

U.S.-Canadian policy is basis

The export of natural gas from northwestern Canada on a basis profitable to the citizens of both countries obviously would be in accord with the basic policies established by the governments of the United States and Canada, as those policies pertain to the defense problems of both countries.

The basic agreement between the United States and Canada included in the Statement of Principles for Economic Cooperation is as follows:

> It is agreed, therefore, that our two governments shall cooperate in all respects practicable, and to the extent of their respective executive powers, to the end that the economic efforts of the two countries be coordinated for the common defense and that the production and resources of both countries be used for the best combined results.

The agreement then established six principles "for the purpose of facilitating these objectives."

1. A coordinated program of requirements, production and procurement. 2. Coordinated controls of the distribution of raw materials. 3. Coordination of emergency controls. 4. Free exchange of technical knowledge and productive skills. 5. The removal as far as possible of barriers which impede the flow . . . of goods essential for the common defense effort. 6. Consultation concerning financial or foreign exchange problems.

Surely there cannot be a person . . . who does not agree that we must do business with Canada and with Canadians. . . . Let me turn, therefore, to a discussion of the merits of these two projects which so vitally affect the Pacific Northwest, one supplying gas from the San Juan Basin in New Mexico and one from the Peace River area in northern British Columbia and Alberta.

Both companies have filed suggested tariffs with FPC proposing almost identical rates for Seattle and Portland, although Westcoast has agreed to file a slightly lower commodity rate. As the Natural Gas Act permits a fair rate of return to pipeline companies on their actual investment in the project and final effective rates are not filed until 60 days before completion of construction, distributors clearly are obligated to determine what the gas may actually cost them in the event of over-runs in construction cost. And such experiences are both common and frightening. . . .

As the rates proposed by our two applicants approximate the maximum practicable rates we can pay, any substantial over-

(Continued on page 37)

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"You Can't Sell Gas That Leaked Out"

. . . N. HENRY GELLERT said

(Continued from page 35)

government's possible reluctance to price Canadian gas out of the market, we must ask ourselves, whose market? . . .

Even at 45¢ per Mcf we would take all the gas we could get. We, the American utilities, would undoubtedly, be priced out of the industrial market, but with the investment we and our customers would have in the natural gas system, no choice would be left to us.

The manufacturing of 1,000 Btu gas would be no substitute at that price, even though some of us are equipped to produce high Btu gas.

In that phase, the Seattle Gas Company, has been the leader. We were the first gas company in the Pacific Northwest to convert low Btu generating equipment to produce high Btu gas. . . .

. . . Because there is no regulatory body in Canada like FPC is no indication there will not be one. The development of gas pipelines in Canada is most likely to bring about regulation and control by a federal agency of some sort in that country.

No one has satisfactorily explained to us what is to prevent the Canadian pipeline company from raising the price of gas delivered to the American pipeline company, either by its own action . . . or by order.

The danger of being forced to pay an increased price for gas delivered by a Canadian pipeline, without the chance of argument before an American governmental agency, therefore is very real. . . .

Doesn't want foreign control

American public utilities would, therefore, be in the unique position of being regulated as to price, at least, by a Canadian governmental agency!

. . . We are foreigners to Canada, and we, as an American public utility, are unwilling to become an economic vassal of a foreign power.

. . . when a single pipeline brings gas from a single source, a gas company must take that gas under any conditions, or else stop service. . . . The control of that pipeline will have an important effect on the industrial development of the Pacific Northwest of the United States. More power will come through it than is generated by the Coulee and Bonneville dams together. . . . At the end of the third year, it is estimated, Canada will use only 18.23% of the gas from the pipeline.

With regulation of that line out of the hands of any American agency, the whole economy of the Pacific Northwest could become a vassal of a foreign nation . . . for our economy is based largely on industry, and industry is dependent on thermal as well as mechanical and electro-chemical power.

The Canadian pipeline will shift approximately a billion dollars from the pockets of American investors and consumers to those of Canadians. Canadian labor will be employed to build most of the line; it has even been contemplated to build a steel plant in Vancouver to manufacture the steel for the line. If that project falls through it

(Continued on page 38)

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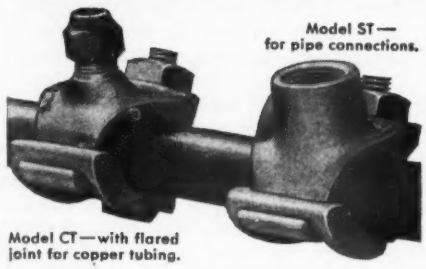

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. . . C. H. GUEFFROY said

(Continued from page 35)

runs in construction costs must be avoided if supplying natural gas is to be successful for the pipeline company, for the distributors, for the general economy of the area.

It was this concern on our part that prompted us to employ the Bechtel Corporation to reverse, supplement, or confirm the conclusions reached by our own executives and engineers . . . in the judgment of the Bechtel Corporation, the proposed pipeline system of Westcoast Transmission Company has the following advantages over its rival project: 1. It has a lower initial cost. 2. It can be expanded to a capacity of approximately 400 MMcf per day with a modest increased capital cost. 3. It will have a lower operating cost. 4. It will be as reliable in operation as the Pacific Northwest Pipeline system. 5. The system proposed by Pacific Northwest Pipeline Corporation cannot be expanded beyond a capacity of approximately 300 MMcf per day without extremely large additional . . . expenditures.

Bechtel's conclusion was and is that . . . Westcoast Transmission . . . can transport gas to the Pacific Northwest . . . at a cost of approximately 5¢ per Mcf less than Pacific Northwest Pipeline Corporation.

Bechtel reviewed the capital expenditure data submitted by these two applicants and . . . expresses the opinion . . . that the estimates of probable capital expenditures for the two pipelines would be more realistic if the Westcoast estimate were increased by $6,000,000 and if the Pacific Northwest estimate were increased by $31,000,000.

Doesn't like Pacific Corp. plan

In considering the matter of a natural gas supply for the Pacific Northwest, we were required to give serious consideration to our position in the future, after the initial capacity of the line has been contracted. In this connection, the engineering witness for Pacific Northwest testified that the pipe size and units of their line were intentionally kept to the minimum, and that 100% of the line capacity would be in use by the end of the third year. What would we do after that? The line must be looped and we would have to bid for additional gas in competition with California, New Mexico, Colorado and Arizona, all much closer to the source of supply than the Pacific Northwest. The situation in Canada is quite the opposite. The design of the line allows for substantial expansion and the Pacific Northwest is the only feasible market outlet for additional gas when we need it.

Another aspect of the Pacific Northwest proposal which gives us great concern is the projects combination of the production and transmission of gas and the substantial measure of its dependence for financial feasibility on the contemplated recovery and sale of a large volume of by-products (casinghead gasoline, propane and butane), the revenue from which is estimated to be greater than the estimated net income of the project.

Moreover, there is this important unanswered question: If and when the production phase of the business becomes highly profitable, what is there to stop Pacific

(Continued on page 38)

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. . . N. HENRY GELLERT said

(Continued from page 36)

Northwest from divorcing that part of the business from its pipeline transmission . . . as has been done by a number of companies and is now in the process of being will be only because it is not in the interest of the Canadian public to have it so, or because it will not pay out. Canadian gas wells will be drilled with that money; Canadian labor will work in the gas fields; Canadian railroads and trucks will haul the materials for the line; Canadian promoters will make the usual big profits of promotion; Canadian lawyers, accountants, engineers, stenographers and truck drivers will all benefit. The governments, provincial and federal, will benefit by either taxes and royalties, or both, at the expense of American gas consumers.

But if the pipeline is built from New Mexico, totally within the confines of the United States, what will the billion dollars accomplish?

In the field, it will help to develop natural gas resources in the San Juan Basin; it will furnish a market for wells already drilled, and now capped, and encourage the additional exploration for gas in Colorado, Utah, Wyoming, Idaho, and Washington, for which there will be either no market, or only a very local one, if the pipeline from Canada is built. It will yield 68% of the royalties to the Department of the Interior which owns a great portion of the land in the San Juan Basin. . . . It will yield 19% of the royalties to the Bureau of Indian Affairs which has a direct interest in the mineral reserves. 7% will go to the State of New Mexico. In all, $40,000,000 in royalties will be paid to state and Federal authorities.

It will supply jobs to American workmen. . . . It will buy steel in American steel mills, roll pipe in American shops, dig trenches with American labor and machinery, open up large new areas of natural resources, and pay large sums in Federal and State taxes.

It will supply Colorado, Idaho, eastern Oregon and parts of Wyoming with natural gas, making up the large deficiency in Colorado and Wyoming, and taking care of the others which would be abandoned areas, as far as natural gas service is concerned, if a Canadian line were to be built.

For all these reasons and many more, it is inconceivable to us that FPC will strip itself of the police power vested in it by law for the protection of American public interest and turn us over to a foreign policing agency dedicated to the protection of Canadian public interest; or that an American regulatory agency will fail to assert its authority over any pipeline supplying us, and place us at the mercy of the decisions of a foreign power.

. . . C. H. GUEFFROY said

(Continued from page 37)

accomplished by Northern Natural. As the project is now set up, the proposed delivered price of the gas is being subsidized by the production operations. . . . Our own studies indicate that our cost of gas from this New Mexico source could easily be 10¢ per Mcf higher than suggested by Pacific Northwest's estimates.

These unknown factors do not apply to the Westcoast project, which has firm gas purchase contracts with producers and therefore knows exactly what its gas will cost. Incidentally, the Canadian producers have agreed to sell their gas as low as 5¢ per Mcf at the outset in order to make their contribution to a proper delivered price to distributors.

How importation is viewed

The management of our company has given serious consideration to possible hazards arising out of the importation of natural gas from Canada and particularly to the probability of interruption of supply by either the Canadian federal government or by the provincial government of Alberta, which by law could interrupt the supply in the event of emergencies of which it can be the judge.

I think we may dismiss any concern as to the federal government, which has granted a 22-year export license to Westcoast for the full volume needed to supply estimated markets in the Pacific Northwest up to the rate of 83 billion feet for the fifth year and for the following 17 years in yearly amounts as may be determined by the Canadian government, but at a rate not less than that authorized for the fifth year.

Moreover, the Honorable C. D. Howe, Minister of Trade and Commerce of Canada, in defining the government's natural gas policy, said on March 13, 1952:

> There is, however, a shortage of energy in the northwestern states ad-

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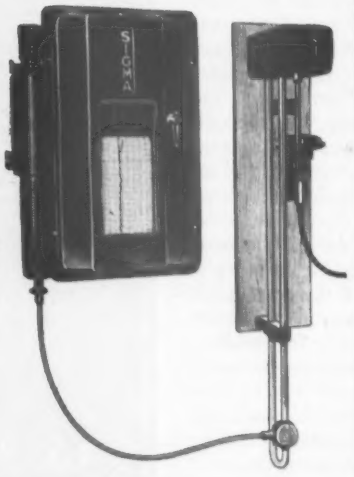

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jacent to British Columbia. For a long time the United States members of the joint industrial mobilization committee of the United States and Canada have been pressing the Canadian members of the Committee to arrange for delivery of natural gas from Canada into that area. The provinces of Alberta and British Columbia are convinced that supplies from the areas designated to serve the Pacific Coast are ample to guarantee a substantial export of gas to the northwestern states, and, in addition, to serve the present and future needs of British Columbia. This opinion has been confirmed by petroleum experts of the federal government.

Therefore the government has issued an export permit to Westcoast Transmission Company Limited, in terms appropriate with the supply situation in the designated area. While this permit is renewable from year to year, the Canadian government accepts the responsibility of providing gas in quantities specified in the license granted under the Electricity and Fluid Exportation Act for the full period of the export license issued by the province of Alberta, assuming that Westcoast Transmission will live up to its obligation to supply customers in British Columbia.

I should add that while Mr. Howe's statement speaks of a one-year permit renewable from year to year, the government subsequently issued the 22-year export license to which I have already referred in order to aid the financing of the project. I have found no one but the management of Seattle Gas Company who suggests that a treaty be required further to guarantee performance under this license. As far as I am concerned, if the insurance companies and bankers are willing to invest their money in the project, we will go along and finance our own construction requirements to market the gas.

I feel equally assured about the provincial government of Alberta, which has encouraged oil and gas exploration and cannot possibly utilize the great volumes which lie within its boundaries. In any event, two-thirds of the gas for the Westcoast line will come from fields in the Province of British Columbia, which has no restrictive laws as to exportation and which cannot economically provide its own city of Vancouver with a natural gas supply unless the line is extended south to Portland. In this connection, let me quote just two paragraphs from a letter written by Premier W. A. C. Bennett to Mr. Lloyd K. Turner of Westcoast:

> I am sure, as you and the Federal Power Commission must be, that there would be no interference with the export of natural gas from our Peace River field to the Pacific Northwest portion of the United States.
>
> It is clear that with the great shortage of power developing in the Pacific Northwest, it would be a great crime if the natural gas deposits in our Peace River territory were not utilized at this time.

I am frankly puzzled by the expressed fears of the president of Seattle Gas Company in the past year as to possible unfriendly acts by the federal or provincial governments in Canada in the light of his testimony of June 2, 1950, at a hearing of the Alberta Petroleum and Natural Gas Conservation Board. Asked by counsel . . . to reconcile any concern he might have about the interruptible clause with his desire for a 20 or 25 year contract, Mr. Gellert replied:

> Before signing any contract with any pipeline or giving a letter of intent, we would consult our attorneys and our engineers regarding the probability of serious interruption of gas supply and its consequences to us, and on the basis of those consultations we would come to a final decision. The provisions of the Gas Resources Act, like the question of adequate reserves, in our opinion, are matters that have to be treated as considered risks in our business. No business is done except on considered risks and we would treat this in exactly the same fashion.

Further, Mr. Gellert signed, under date of November 3, 1951, a 20-year contract between Seattle Gas Company and Northwest Natural Gas Company for a supply of natural gas from Alberta, which contract could not be carried out because an export license was not obtained. He then was not even concerned about an export tax which he now states could run as high as 10¢ per Mcf. I might say parenthetically that electricity has been exported from Canada to the United States for many years at only a fraction of a mill of export tax.

(Continued on page 48)

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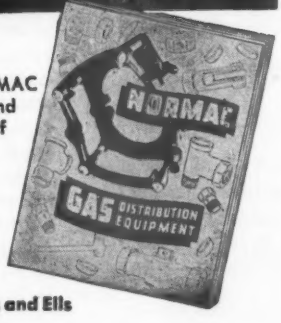

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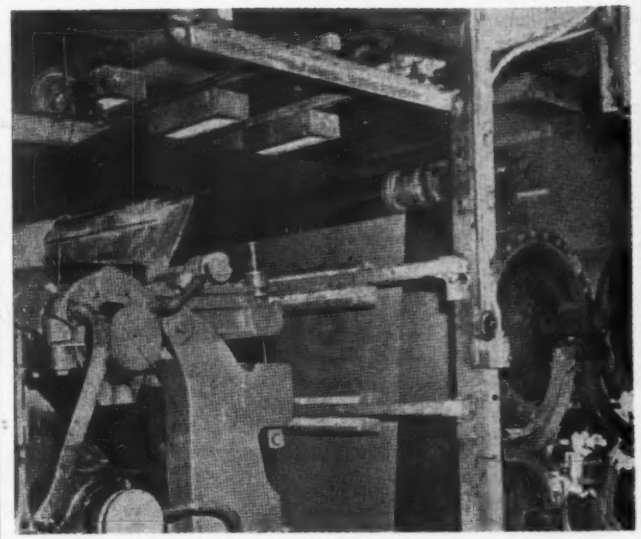

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. . . C. H. GUEFFROY said

(Continued from page 39)

Bechtel Corporation has pointed out that there are no substantial differences in the degree to which the elements would threaten the construction or the operation of either of the pipelines, and that the amount of hazardous line and relatively inaccessible places, as well as the severity of storms, would be approximately equal for the two pipelines. In this connection, let me say that we in Portland feel reasonably comfortable in having a standby oil gas generating plant which can produce daily more than 30 million cubic feet of high Btu gas to replace natural gas should an emergency arise.

Says Westcoast Transmission can do

After giving weight to all the factors which I have mentioned, our management came to the conclusion in April of this year that Westcoast is the only applicant that can deliver a natural gas supply to us at prices and on terms permitting development of Portland Gas & Coke Company's anticipated market. Following this decision on our part, we undertook further negotiations with Westcoast . . . and reached satisfactory understandings as to the terms of a supply contract, contingent upon Westcoast obtaining necessary government authorizations. They have obtained the required consents insofar as Canada is concerned, and we are urging FPC to grant Westcoast a certificate of convenience and necessity so that work on the project may be expedited and natural gas made available to the people of the Pacific Northwest who have been waiting patiently while other sections of the nation are enjoying the benefits of this "wonder fuel."

. . . our agreement with Westcoast, which would apply to other distributors as well, contains decidedly advantageous provisions, some of which the Pacific Northwest Pipeline Corporation cannot grant. These provisions include the very important agreement that any over-run in base construction cost above $4,000,000 will be absorbed by the pipeline company in Canada, and will not be included in the determination of rate of return by FPC. The Canadian corporation of Westcoast will guarantee without reservation the performance of the United States corporation with which we would contract. Actually, in this case FPC is only concerned with establishing a firm price for gas at the Canadian border and with the return to be allowed on the investment in the United States, which is estimated at approximately 25 million dollars.

This is not a matter to be decided emotionally. It must be decided upon the basis of an objective appraisal of the intrinsic merits of the pipeline proposals. . . . I do not believe that the people of the Pacific Northwest are willing to pay an additional charge of $4,000,000 or more every year for the privilege of obtaining their natural gas supply from a source within the United States. In fact, such a penalty will place the whole scheme of natural gas for the Pacific Northwest in extreme jeopardy.

Canadian-American history knows no treachery, economic or political. Neither nation can afford, for reasons of self-interest alone, to prejudice the interests of the other. The 3,000-mile boundary between these two great friendly nations will remain not only the longest unfortified political boundary in the world, but the world's friendliest and most cooperative boundary —an object lesson to a world hoping anxiously for permanent peace.

Canadian Gas Reserves Expanding

Alberta's overall gas reserves have been placed at 18¾ trillion cubic feet by DeGolyer & MacNaughton, Dallas geologists. That includes an increase of more than 6 trillion cubic feet in the past two years. These figures were submitted in evidence before Alberta's Petroleum and Natural Gas Conservation Board in its export hearings, last month. The evidence was submitted for Trans Canada Pipe Lines, Ltd., seeking to take gas from Alberta to eastern Canada. At the same time Northwest Natural Gas Ltd., dropped its proposal for an all-Canadian route to eastern Canada similar to that proposed by Trans Canada.

Fargo Oils, Ltd., of Canada, controlled by General American Oil Co. of Texas, announced completion of an agreement with Gulf States Oil Co. of Canada to explore for oil and gas on one million acres of Fargo leases in Canada.

Fargo holds leases on more than 3.6 million acres in northeastern British Columbia. Gulf States has agreed to spend $1.5 million on the two-year exploration program, according to General American, and geo-physical surveys are now in progress. Immediate drilling is scheduled on some of the acreage. Under a contract effective June 1 all exploration and discovery costs will be borne by Gulf States. But any oil or gas fields discovered will be owned jointly and equally by Fargo and Gulf States.

Gulf States is a wholly-owned subsidiary of Western Natural Gas Co. of Houston, which in turn is a subsidiary of El Paso Natural Gas Co. The exploration agreement is the second announced by Fargo. The first, disclosed earlier this year, provided for a $500,000 exploration and drilling program by a syndicate of Texas oil men. The group's first well is now drilling on the Butler Ridge anticline in the Peace River area, British Columbia.

Appalachian Gas Measurement Short Course Set for August

The thirteenth annual Appalachian Gas Measurement Short Course will be conducted from August 24 to 26 at the West Virginia University School of Mines, Morgantown. C. H. Whitwell, Equitable Gas Co., is general chairman for the session. C. G. Moorhead, Hope Natural Gas Co., is program chairman and R. E. Hanna, Jr., West Virginia University School of Mines, is secretary.

The course consists of about 90 class sessions on all phases of gas metering, regulation and associated subjects. The classes are conducted by men in the equipment manufacturing, gas industry and academic fields. In addition to the classroom sessions, 31 companies will display their equipment in the exhibit laboratory.

Sponsored by the university's School of Mines, the course is considered beneficial for gas measurement men. Attendance at last year's session was about 550 and an equally high turnout is expected for the August session.

Bonnett Heads AGA Award Group

L. B. Bonnett, vice-president, Consolidated Edison Co. of New York, Inc., has been appointed chairman of the 1953 Distinguished Service Award Committee of American Gas Association. Other members appointed to the committee are: J. J. Hedrick, president, Natural Gas Pipeline Co. of America, Chicago; and C. H. Zachry, president, Southern Union Gas Co., Dallas.

The award is bestowed for exceptional contributions made in such fields as improving industrial use of gas, labor-saving accountancy; public relations; development of an improved process for manufacturing gas; dealer cooperation, research; and for progress in changeover from one kind of gas to another.

Rockwell Instruments to Tulsa

Rockwell Manufacturing Co. is transferring all of its gas industry instrument production from Pittsburgh to its Macnick division plant in Tulsa, Okla.

There will be no physical expansion of facilities at Tulsa but some machinery is being moved there from Pittsburgh and new employees will be added.

Chief reason for the move, the company reported, was to concentrate instrument production in one locality for better engineering and manufacturing control. The Tulsa plant is currently producing other Rockwell gas industry instruments.

General manager of the Macnick division is W. M. Connor.

MEN AT WORK

G. N. Bell is Sprague Meter Co SM

At a recent general sales conference, Sprague Meter Co. announced the appointment of G. N. Bell as field sales manager.

G. N. Bell

Mr. Bell has been associated with the gas industry for more than 20 years. Prior to joining Sprague Meter, as sales engineer covering the north eastern territory, he was with Consumers Power Co., Mich.

As field manager he will travel the entire country coordinating all sales of the various branches and the home office. He will headquarter in Bridgeport, Conn.

AWARD GIVEN TO 3 BOSTON CONSOLIDATED GAS CO MEN

Three employees of Boston Consolidated Gas Co. are the first employees of a gas utility in the United States or Canada to win the McCarter Medal and Certificates of Assistance for life saving by the recently-adopted back-pressure, arm-lift method of resuscitation.

American Gas Association recently presented the McCarter Medal to Robert J. Quinn, of Central Street division of the gas utility. At the same time Certificates of Assistance were awarded to Philip Kearney and John S. Russell.

These men won the honor by their efforts in saving the life of a woman on May 15, at her home in Dorchester, Mass. The presentation was made on behalf of AGA by E. H. Eacker, president, Boston Consolidated Gas Co., vice-president of AGA, and chairman of the AGA executive safety committee.

The McCarter Medal was made available by Thomas N. McCarter, former chairman and president, Public Service Electric & Gas Co. (N. J.).

Rockwell Names Texas Plant Mgr

P. E. W. Goodwin, Jr., manager of outside manufacturing facilities for Rockwell Manufacturing Co. since 1952, has been named manager of the company's new meter and valve plant scheduled to open next fall in Sulphur Springs, Tex.

Since 1952, Mr. Goodman has been in charge of the manufacture of valve parts for Rockwell at plants operated by Lyco Machine Works and Hovey Machine Co., both of Oakland, Cal., and several other firms. From 1944, when he joined the company, until 1952, he served as purchasing agent at the Oakland plant.

Koppers Co Lists Promotions

Carl H. Pottenger, assistant sales manager since 1948, chemical division, Koppers Company, Inc., has been promoted to assistant vice president and division sales manager.

Other recent appointments announced by the company are: Harry P. Neher, Jr., appointed assistant manager, central staff sales department; Thomas H. Cable, appointed manager, sales methods section; George C. Miller, appointed manager, international product sales section; Donald L. DeVries, appointed manager, precipitator department, metal products division; and J. W. Pool, Jr., appointed assistant sales manager, chemical division.

Two Shifts in Ohio Fuel Gas

Wilbur T. Shinholser, vice president and chief engineer of Ohio Fuel Gas Co., has been named a vice president of Columbia Gas System Service Corp. In this new post he will assist in the coordination of activities of all Columbia Gas System companies in regulatory matters before the Federal Power Commission.

Also, the company has anounced the promotion of Paul W. Rogers to chief engineer, succeeding Mr. Shinholser.

Mr. Shinholser joined the company in 1929 after serving 12 years with Cities Service Co. He was named assistant chief engineer in 1937, chief engineer in 1943, and was elected a director in 1949 and vice president in 1950.

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American Gas Journal

Mr. Rogers has been assistant chief engineer since February, 1952. He joined the company in 1933 in the gas measurement department and two years later was transferred to the pipelines department as an engineer.

Stetson is VP of Stuart Steel

R. W. Stetson has been appointed vice president of Stuart Steel Protection Corp., Kenilworth, N. J.

Prior to joining the company he was associated with Dowell, Inc. and the Dow Chemical Co. in their cathodic protection sales division. He is a member of American Gas Association, the Society of Marine Port Engineers, and National Association of Corrosion Engineers.

Bridgeport Gas Light Elects 2

Earl B. Snell, controller of The Bridgeport Gas Light Co., was elected to the board of directors of the company at the annual meeting of stockholders held recently. At the same time, it was announced that Henry V. Lindeman has been elected vice president in charge of operations.

Mr. Snell has served as controller since 1942 when he resigned as chief of a utilities section of the Securities Exchange Commission in Washington, D. C.

Since July 1951, Mr. Lindeman has acted as engineer for the company. For six years prior to that time he made engineering studies for more than 70 gas companies in his capacity as engineer for Ebasco Services, Inc.

Thompson is Aztec Oil & Gas Co Vp

Van Thompson has been elected vice president of Aztec Oil and Gas Co., wholly-owned subsidiary of Southern Union Gas Co., Dallas. As vice president, Mr. Thompson will continue to have supervision of Aztec's geological exploration, land and lease, production and drilling activities, and will continue as manager of Southern Union's exploration department.

Van Thompson

Mr. Thompson has been with Southern Union since 1929. He was employed in the company's New Mexico properties in all phases of field operations until moving to Dallas in 1938 as engineer. In 1945, he was made manager of the engineering department and in 1951 became manager of the exploration department.

C. R. Bowen Joins AGA Hdqrs Staff

Charles R. Bowen has joined American Gas Association headquarters staff in New York, as assistant manager of the new freedom gas kitchen program.

Mr. Bowen is experienced in contact with national and trade magazines, and in the staging of national exhibits, and will continue this type of promotional work in his new position with AGA.

GAS INDUSTRY CALENDAR

July

13-17 Western summer radio-television and appliance market, Western Merchandise Mart, San Francisco.
13-17 National housewares & home appliance manufacturers exhibit, Auditorium, Atlantic City.

August

24-26 Appalachian gas measurement short course, West Virginia University, Morgantown, W. Va.

September

9-11 PCGA, San Francisco.
10-11 30th Mid-West Gas School and Conference, Iowa State College, Ames, Iowa.
11 New Jersey Gas Association, Spring Lake, N. J.
26 Southern Gas Association, transmission section, round table on rights-of-way problems, Tutwiler Hotel, Birmingham.

October

6-7 Texas Mid-Continent Oil & Gas Association, Rice Hotel, Houston.
7-9 National Association of Corrosion Engineers, South Central region, Mayo Hotel, Tulsa.
19-23 National metal exposition, Public Auditorium, Cleveland.
26 AGA Board of Directors, St. Louis.
26-28 AGA annual convention, Kiel Auditorium, St. Louis.

November

9-13 National Hotel Exposition, Kingsbridge Armory, New York.
11-13 Wisconsin Utilities Association, Hotel Schroeder, Milwaukee, Wis.
17-20 AGA operating section, organization meetings, Hotel New Yorker, New York.
29-December 4 The American Society of Mechanical Engineers, Statler Hotel, New York.
30-December 2 Southern Gas Association, advisory council and management conference, Grand Hotel, Point Clear, Ala.

March, 1954

25-26 New England Gas Association, Hotel Statler, Boston.

April, 1954

5-7 Southern Gas Association (Location to be announced)
12-14 AGA Sales Conference on Industrial and Commercial Gas (Location to be announced)
20-23 AGA Distribution, Motor Vehicles and Corrosion Conference, Mount Royal Hotel, Montreal, Canada.
26-28 Mid-West Regional Sales Conference, Edgewater Beach Hotel, Chicago.

May, 1954

9 (week) 35th Annual National Restaurant Convention and Exposition, Navy Pier, Chicago.
10-13 LPGA Annual Convention, Conrad Hilton Hotel, Chicago.
24-26 AGA Production and Chemical Conference, Wm. Penn Hotel, Pittsburgh.
27-28 Natural Gas and Petroleum Association of Canada, Prince Edward Hotel, Windsor, Ontario, Canada.

June, 1954

20-24 Canadian Gas Association, Banff Springs Hotel, Banff, Alberta, Canada.
28-29 Michigan Gas Association, Grand Hotel, Mackinac Island, Mich.

July, 1954

19-23 Western summer radio-television and appliance market, Western Merchandise Mart, San Francisco.

September, 1954

8-10 Pacific Coast Gas Association, Victoria, British Columbia.
28-29 Texas Mid-Continent Oil and Gas Association, Baker Hotel, Dallas.

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